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HARVARD SCHOOL OF PUBLIC HEALTH



Courses of Instruction
1962 — 1963

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THE HARVARD SCHOOL OF PUBLIC HEALTH

1962-63



*55 Shattuck Street
Boston, Massachusetts*

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Rotch Building

CONTENTS

SECTION I — INTRODUCTORY INFORMATION	5
PRESIDENT AND FELLOWS OF HARVARD COLLEGE	7
THE BOARD OF OVERSEERS	7
VISITING COMMITTEE OF THE BOARD OF OVERSEERS	9
ADMINISTRATIVE OFFICERS	11
ADMINISTRATIVE BOARD	12
FACULTY OF PUBLIC HEALTH	12
INTRODUCTION	17
FACILITIES	18
EXTRACURRICULAR ACTIVITIES	20
SECTION II — ADMISSION REQUIREMENTS, COURSES OF STUDY AND DEGREES	23
Application for Admission	25
Living Expenses	26
Master of Public Health	27
Master of Science in Hygiene	28
Master of Industrial Health	30
Doctor of Public Health	31
Doctor of Science in Hygiene	31
Requirements for Doctoral Degrees	32
Special Students	34
Degrees in Engineering	34
Grading System	34
SECTION III — CONTENT OF COURSES	37
Interdepartmental Courses	39
Division of Environmental Health Sciences and Engineering	41
Industrial Hygiene	45
Physiology	48

Sanitary Engineering	51
Biostatistics	52
Demography and Human Ecology	54
Epidemiology	56
Maternal and Child Health	59
Microbiology	63
Nutrition	67
Public Health Practice	71
Tropical Public Health	81
SECTION IV — SPECIAL PROGRAMS	87
Courses of Study in Preparation for Academic Careers . . .	89
Program Related to Mental Health and Mental Disorder . . .	90
Programs of Study in the Division of Environmental Health Sciences and Engineering . . .	91
Program in Public Health Education	93
SECTION V — GENERAL INFORMATION	95
Registration	97
Foreign Students	97
Fees and Expenses	97
Student Health Service	100
Housing	101
Employment	101
Scholarships, Fellowships and Traineeships	102
STUDENTS 1961-62	105
DEGREES CONFERRED IN JUNE, 1961 AND MARCH, 1962	108
SCHEDULE OF COURSES OFFERED IN 1962-63	112
CALENDAR FOR THE ACADEMIC YEAR 1962-63 . . .	<i>Inside Back Cover</i>

Section I
Introductory Information

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RALPH THEODORE ESTERQUEST, A.M.

Office, Building A, Harvard Medical School, 25 Shattuck Street,
Boston.

Director, Health and Medical Care

Program for Students: DONALD ASA TUCKER, M.D.

Office, Peter Bent Brigham Hospital, 721 Huntington Avenue,
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The Offices of Administration of the School of Public Health are
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CLINICAL ASSOCIATE

THOMAS FRANZ ALFRED PLAUT, PH.D., M.P.H., *Public Health Practice*.

The names of the members of the teaching and research staff are listed in their respective departments under Content of the Courses, pages 37-86.

INTRODUCTION

The Harvard School of Public Health is one of the six privately endowed institutions in the United States which are primarily devoted to graduate education in public health. The School operates as an independent unit of Harvard University in close association with the Faculty of Arts and Sciences; the Graduate Schools of Education, Public Administration and Business Administration; the Medical School; the School of Dental Medicine; and the various Harvard hospitals. This introduction indicates in a general way the opportunities the School affords those students who are seeking a career in one or more of the three principal areas of public health activities: teaching, research, and administration.

Public health evolved from the early combination of medical science and engineering for the control of environmental hazards. Public health has grown to embrace various facets of the biological, physical and social sciences as the community aspects of health problems have become more complex. In its plans for the future, the Harvard School of Public Health is principally concerned with two general kinds of problems. In the first category are the problems which have emerged as certain areas of the world have become highly urbanized and technologically advanced. Foremost among these problems are mental illness, cancer and the degenerative diseases, accidents, and the hazards of ionizing radiations. Discovery of causes and factors which modify the course of illness and injury is necessary for the development of prevention and control. Research is also needed to achieve effective administrative technics for the provision of optimum health services for entire communities.

The other general category of problems in public health derives from the fact that more than half of the people in the world reside in areas seriously afflicted by malnutrition and communicable diseases. The programs which have been successful in the technologically advanced countries often cannot be used because of basic differences in culture, geography or economic factors.

HARVARD UNIVERSITY

In its approach to these problems the Harvard School of Public Health has as its objective the advancement of public health, both nationally and internationally. The School seeks to accomplish its objective through its activities in education and by its search for knowledge. The Faculty is equally committed to basic research in new fields and to the development of effective methods for the application of knowledge by communities or nations. The Faculty of the School and its alumni have the opportunity to play a role of major importance in the decades ahead as the profession of public health deals with the health problems of our rapidly changing societies.

The primary intent of the curriculum in the Harvard School of Public Health is to attract individuals who have the potentiality for original contributions to public health. In the selection of applicants preference will be given by the Admissions Committee to students who are capable of undertaking a course of study leading to a doctoral degree in one of the departments or disciplines of the School.

FACILITIES

Most departments of the School of Public Health are housed in four buildings: the Rotch Building at 55 Shattuck Street, the Huntington Building at 1 Shattuck Street, and two new research buildings at 665 Huntington Avenue, Boston (15). The administrative offices are in the Rotch Building. The School's buildings are adjacent to the Harvard Medical and Dental Schools, the Children's Medical Center, the Peter Bent Brigham Hospital, and the Boston Lying-in Hospital.

The facilities of the hospitals and the adjacent institutions are available to qualified students of this School, and are used in connection with the teaching of various subjects. In addition, students enrolled at the School may take courses in other departments of Harvard University, such as in the social sciences, public administration, and medical sciences. Certain graduate courses at the Massachusetts Institute of Technology are also open to students of this School.

The Department of Sanitary Engineering of the School is also part of the Division of Engineering and Applied Physics of the Har-

vard Graduate School of Arts and Sciences. The basic course in Water and Food Sanitation for students of the School of Public Health is taught here, but properly qualified students may also register for courses in Sanitary Engineering given in Cambridge.

Of particular interest to students of this School is the close contact with health agencies in Massachusetts and elsewhere. The divisions of the Massachusetts Department of Public Health not only furnish opportunities for observation and training in their fields, but their staffs enter into the teaching at the School. Administrative methods at local levels may be studied at first hand in some of the health departments in the Greater Boston Area.

There are two special areas for study and training purposes closely linked to the School. The Whittier Street Health Center, a district health unit of the Boston City Health Department, is used for research in problems of administration and of community mental health. The other special area includes the territory covered by the Nashoba Associated Boards of Health some 30 miles from the School. It furnishes opportunities for the investigation of rural problems and administrative methods, supplementing those offered by the Whittier Street Health Center.

The Institute of Laboratories of the Massachusetts Department of Public Health is engaged in a program of general interest, attracting visitors and students from various parts of the United States and from foreign countries. It not only performs a wide variety of standard bacteriological, immunological and chemical procedures, but is actively engaged in several research programs. Its Superintendent is a member of the School's faculty. This close contact with one of the country's outstanding laboratories provides unsurpassed opportunities for qualified students who wish to obtain intensive experience in many types of laboratory methods of particular pertinence to public health.

The clinical and laboratory facilities of the Lemuel Shattuck Hospital are available to students of the School. This hospital was built by the Department of Public Health of the Commonwealth of Massachusetts for the treatment and rehabilitation of patients with chronic diseases. Since the average duration of hospitalization is

HARVARD UNIVERSITY

usually longer than that in general hospitals, an opportunity is afforded to study chronic disease problems not encountered in general hospitals. The training program, consultant rounds and professional staff appointments are under the aegis of the Deans of Boston University, Harvard and Tufts University Medical Schools, as well as the Harvard School of Public Health. Research laboratories at the Shattuck Hospital are engaged in studies of arthritis, hematology, pulmonary function, radioisotopes, cancer therapy and chronic renal and hepatic diseases.

Libraries

The joint Library of the School of Public Health and the Harvard Medical School is on the second floor of the Administration Building of the Medical School. It is open from 9 a.m. until 10 p.m. on week days, from 9 a.m. until 5 p.m. on Saturdays, and from 2 p.m. until 6 p.m. on Sundays. There are at present 330,000 catalogued volumes and pamphlets, and 1,750 periodicals are received currently.

Students also have the privilege of using the College Library in Cambridge, as well as the various departmental libraries belonging to the University, in all of which there are more than 4,000,000 volumes and pamphlets.

The Boston Medical Library, No. 8 The Fenway, contains about 225,000 bound volumes and 160,000 pamphlets, and receives 1,200 current periodicals. This valuable library is open on week days from 9 a.m. to 5 p.m., Saturdays 9 a.m. to 1 p.m., and on Mondays and Thursdays until 9 p.m., Oct. 1 through May 31.

Students of the School also have access to the Boston Public Library.

EXTRACURRICULAR EVENTS

A significant part of the opportunity for the exchange of knowledge in the health fields is the extracurricular activity which takes place under student or faculty sponsorship. Throughout the year there are informal interchanges of ideas among members of the student body and their families, particularly in the social and recrea-

tional areas of the Henry Lee Shattuck International House. In addition there are discussions on topics of international interest including presentations by students on the culture, geography, and social structure of their home countries. The Henry Lee Shattuck International House now has equipment for showing films and colored slides which facilitates the scheduling of such occasions. At the School there are showings of films followed by discussion periods for clarification of the material or consideration of its uses. The subject matter is varied, but has emphasized topics in mental health and maternal and child health.

Section II

Admission Requirements Courses of Study and Degrees

ADMISSION REQUIREMENTS

APPLICATION FOR ADMISSION

Applicants for admission to the School must submit the following material for consideration by the Committee on Admissions and Degrees: (1) completed application form; (2) transcripts of academic record at college, graduate school and/or professional school; (3) names of at least three people, well acquainted with the applicant's previous work, from whom the School may request letters of reference.

Applicants from countries in which the language of instruction is not English must satisfy the Committee on Admissions and Degrees as to their ability to speak, read, write and understand the English language competently. In order to profit from a program of graduate study, the applicant must have sufficient knowledge of English to enable him to understand lectures in English, to participate in seminar discussions and to write examinations. In the absence of sufficient evidence from the sponsoring agency and other sources, the School may request that the applicant take and pass satisfactorily the University of Michigan English Language Test. If, upon arrival at the School, a student's command of English is found to be inadequate, he may be required to take further instruction in English.

In addition to fulfilling the specific requirements for admission to the several degree programs, applicants must satisfy the Committee as to their scholastic ability and potentiality for profitable study at a graduate level. In all instances, the final judgment as to the admissibility of an applicant rests with the Committee on Admissions and Degrees.

Preference will be given to applicants under 40 years of age; applicants over 45 years of age may be considered for admission only under exceptional circumstances.

The School is unable to accept all who apply and are eligible for admission. Therefore, persons who wish to be considered for ad-

HARVARD UNIVERSITY

mission to the 1963-64 Class are urged to submit their applications by April 1, 1963. However, applications which are completed *by July 31, 1963*, will be considered, subject to availability of space.

Admission of a candidate for one academic year does not automatically admit him in a subsequent year; re-application must be considered on the candidate's own merits in the light of the particular circumstances which govern the decisions of the Committee on Admissions and Degrees.

All inquiries and communications regarding admission should be addressed to The Registrar, Harvard School of Public Health, 55 Shattuck Street, Boston 15, Massachusetts.

LIVING EXPENSES

Experience has shown that it is difficult for a student to get the most out of his year at the School if he has to be unduly concerned about funds to meet his expenses. Living costs in the Boston area are usually found to be higher than in most areas from which students come. Therefore, the School has adopted the policy stated below in regard to applicants for admission from outside the United States.

An applicant whose financial support is not guaranteed by an official U. S. agency or foundation must submit evidence satisfactory to the School that he will have sufficient funds available in U. S. currency to enable him to pay his expenses during the academic year. The minimum amount needed by a single person, in addition to travel, is \$3,800, to cover the cost of tuition and health fee (\$1,474) and living expenses of at least \$250 a month for nine months. If an applicant plans to bring his family, he must have at least \$900 more for his wife and \$450 for each dependent child, in addition to travel expense. Certification of adequate financial resources must be received by the School before the immigration form needed to obtain a visa to enter the U.S. can be issued to the student.

COURSES OF STUDY AND DEGREES

MASTER OF PUBLIC HEALTH DEGREE

Requirements for Admission

1. Applicants may be considered for admission as candidates for the Master of Public Health degree if they are graduates of approved schools of medicine or if they have similarly thorough preparation in the biological sciences.

2. Persons with these qualifications must satisfy the Committee on Admissions and Degrees as to their scholastic abilities and potentiality for profitable study at a graduate level. In arriving at its decision, the Committee will give consideration to practical experience when relevant.

Requirements for the Degree

1. One academic year must be spent in residence at the University. The student must complete successfully the required and elective courses to a minimum total of 40 credit units. The basic curriculum for the Master of Public Health degree includes courses in ten areas. All candidates for the degree are required to take the following four courses, unless they can demonstrate equivalent preparation:

<i>Course</i>	<i>Credit units</i>
Biostatistics 1a,b	3.5
Epidemiology 1a,b	2.5
Public Health Practice 1a,b	3
Environmental Health 1d	2.5

2. In addition they must elect a minimum of 12.5 credit units in the remaining six courses of the basic curriculum, as follows:

<i>Course</i>	<i>Credit units</i>
Ecology and Epidemiology of Infectious Diseases (Microbiology and Tropical Public Health 1a,b,c)	6
Epidemiology of Non-Infectious Disease (Epidemiology 2c,d)	3
Man's Responses to the Physical Environment (Environmental Health 1c)	2.5

HARVARD UNIVERSITY

The Human Community (Interdepartmental Course 1a)	2.5
Principles Basic to the Practice of Maternal and Child Health (Maternal and Child Health 1b)	2
Public Health Nutrition (Nutrition 1a)	2.5

3. The remainder of the time will be devoted to departmental or divisional courses, seminars and tutorial work. These courses are described on pages 37-86. Courses offered by other Faculties of the University are also available.

4. No classes are scheduled during the two-week period from January 21 to February 2, 1963. This time may be used for field assignments and for tutorial and laboratory work on special projects.

5. Upon completion of all course requirements the student must pass a comprehensive examination. This examination will be given only at the end of a term.

MASTER OF SCIENCE IN HYGIENE DEGREE (With Designation of a Field of Concentration)

This degree is granted on fulfillment of a program of advanced work in one of the basic disciplines of public health. The courses taken must form an integrated plan of study in one branch of knowledge and allied subjects.

Requirements for Admission

Applicants may be considered for admission as candidates for the Master of Science in Hygiene degree, on the basis of a one-year or a two-year program, if they meet the requirements in one of the categories listed below. They must also satisfy the Committee on Admissions and Degrees and the department within which they choose to specialize as to their potentiality for successful study at a graduate level within the School.

A. One-year Program

1. Applicants who are graduates of approved schools of medicine or who have similarly thorough preparation in the biological sciences.
2. Applicants who have a doctoral degree from an approved school in a discipline related to public health.

3. Applicants in public health specialties (social workers, nurses, health educators, nutritionists) who have obtained a master's degree with honor grades in their special fields and have had at least two years' acceptable experience in a public health activity.

4. Applicants in industrial hygiene or public health engineering who have a bachelor's degree with honor grades in physics, chemistry and engineering and who have a master's degree or equivalent graduate work with honor grades.

B. Two-year Program

1. Applicants with a bachelor's degree obtained with honors in the natural sciences who wish to specialize in one of the laboratory sciences or statistics.

2. Applicants with a bachelor's degree obtained with honors and with an adequate background in the natural sciences who wish to specialize in health education.

Under certain circumstances, a year of graduate work in another institution may be accepted as the first year of this program.

Requirements for the Degree

1. The student must spend a minimum of one year in residence at the University and must complete successfully a program of at least 40 credit units. Candidates in the two-year program must obtain at least 80 credit units.

2. All candidates for the degree are required to take Biostatistics and Epidemiology (Interdepartmental Course 40a,b,c) or, depending on their backgrounds, Biostatistics 1a,b and Epidemiology 1a,b, unless they can demonstrate equivalent preparation. The remainder of the program will be devoted to courses which may be prescribed by the department of concentration and to elective courses in the primary and related fields of interest. These courses are described on pages 37-86. Courses offered by other Faculties of the University are also available.

3. No classes are scheduled during the two-week period from January 21 to February 2, 1963. This time may be used for field assignments and for tutorial and laboratory work on special projects.

HARVARD UNIVERSITY

4. Upon completion of all course requirements the student must pass a comprehensive examination. This examination will be given only at the end of a term.

MASTER OF INDUSTRIAL HEALTH

A program of courses leading to a Master of Industrial Health degree was established in 1949, in recognition of the need for post-graduate training in the public health disciplines which are relevant to the development of health and medical programs in industry.

Requirements for Admission

Candidates for this degree must be graduates of an acceptable school of medicine and must also satisfy the Committee on Admissions and Degrees as to their scholastic abilities and potentiality for profitable study at a graduate level. Students from the United States must have completed an internship of at least twelve months in a hospital approved by the American Medical Association.

Requirements for the Degree

1. One academic year must be spent in residence at the University.
2. The student must complete successfully the required and elective courses to a minimum total of 40 credit units. All candidates for the degree are expected to take the following courses unless they can demonstrate equivalent preparation:

<i>Course</i>	<i>Credit units</i>
Biostatistics 1a,b	3.5
Epidemiology 1a,b	2.5
Environmental Health 1d	2.5
Environmental Health 2a,b (Radiological Hygiene)	4
Environmental Health 7d (Occupational Medicine)	2
Industrial Hygiene 1c,d (Basic Problems in Occupational Health and Industrial Environments)	7
Industrial Hygiene 2a,b (Industrial Air Analysis)	4
Total	25.5

SCHOOL OF PUBLIC HEALTH

In addition, the student may select from the general curriculum courses of interest to him, or do special work subject to approval of the Heads of the Departments of Industrial Hygiene or Physiology.

3. No classes are scheduled during the two-week period from January 21 to February 2, 1963. This time may be used for field assignments and for tutorial and laboratory work on special projects.

4. Upon completion of all course requirements the student must pass a comprehensive examination. This examination will be given only at the end of a term.

DOCTOR OF PUBLIC HEALTH

For the degree of Doctor of Public Health the student must complete an approved program of independent and original investigation in a special field and must present the results of this research in an acceptable thesis.

Requirements for Admission

1. An applicant for admission to candidacy for this degree must be either (a) a graduate of an approved school of medicine, dental medicine or veterinary medicine, or (b) the holder of another doctoral degree in one of the basic sciences related to public health. In exceptional cases, an individual lacking a previous doctoral degree may be admitted if he has displayed outstanding ability in previous academic work and in practical public health experience.

2. The applicant must hold the degree of Master of Public Health or its equivalent from a recognized institution and must have demonstrated potential ability to undertake original investigation in a special field.

3. Admission to doctoral candidacy is considered provisional until the candidate has passed the oral qualifying examination.

DOCTOR OF SCIENCE IN HYGIENE

(With Designation of a Field of Concentration)

This degree is granted on successful completion of a program of independent and original research in one of the basic disciplines

HARVARD UNIVERSITY

of public health, and the presentation of this research in an acceptable thesis.

Requirements for Admission

Candidates for the degree of Doctor of Science in Hygiene must hold the degree of Master of Science in Hygiene or its equivalent and must indicate ability to undertake original investigation in a special field.

Admission to doctoral candidacy is considered provisional until the candidate has passed the oral qualifying examination.

REQUIREMENTS FOR DOCTORAL DEGREES

1. Residence

The student is required to complete a minimum of one academic year in residence. However, the required work and preparation of an acceptable thesis normally requires two full years and frequently longer.

2. Doctoral Program Advisor

After the student enrolls in the School as a provisional doctoral candidate, a Doctoral Program Advisor is appointed by the Department of concentration. This Advisor will keep the student informed of all procedures and requirements for the degree, will advise him about proper courses to be taken, will decide, together with the Department, when the student is prepared to take the qualifying examination, and will supervise the thesis work.

3. Foreign Language Requirement

The candidate must possess a reading knowledge of two languages, other than English, which will enable him to make use of the foreign literature pertinent to his professional interests, including his thesis subject. One of the languages must be French, German or Russian; the second may be another of these three languages or an additional one selected with the consent of the Department of concentration and the Committee on Admissions and Degrees. For a foreign student

one of the languages may be his native tongue, subject to the approval of the Committee on Admissions and Degrees. One language examination must be passed before the candidate is permitted to take the qualifying examination. The second language examination must be passed before the appointment of the Readers of the Thesis. The candidate is urged to satisfy the language requirements as early as possible.

4. Qualifying Examination

When the Advisor and the Department judge that the candidate is prepared, an oral qualifying examination is conducted by Special Examiners, who examine in depth in the area of the candidate's general academic knowledge, his major interest, and related fields. This examination should be taken within six months, but no later than one year, after admission as a provisional doctoral candidate.

5. Evaluation of Candidate's Progress

After the candidate has passed the qualifying examination, two Faculty members are appointed to aid the Advisor in the periodic evaluation of the student's progress.

6. Deadline Dates for Thesis

After the Advisor and Department deem the thesis completed, it shall be typed in final form. Three unbound copies must be deposited in the Dean's Office *before January first*, for degrees to be awarded at midyear, and *before April fifteenth* for degrees to be awarded in June. The thesis must be accompanied by 100 copies of a summary not exceeding 1200 words in length, which shall indicate clearly the purpose, methods, and results of the investigation.

7. Acceptance of the Thesis and Final Examination

When the thesis is submitted, three Readers will be appointed to determine if it is acceptable. If it is approved, a final examination will be given at which the student will defend his thesis before members of the Faculty, including the Readers. Ordinarily, the thesis must be approved within five years of the date of the qualifying examination.

HARVARD UNIVERSITY

A detailed statement of procedures and requirements for the doctoral program and for the preparation of the thesis may be obtained from the Registrar after the student has been admitted to provisional candidacy for the degree.

SPECIAL STUDENTS

Subject to availability of space, the School may accept a few students, on a full-time or a part-time basis, who are not degree candidates, but who are interested in taking one or more courses in a special field. Procedures and requirements for the admission of such students are the same as for degree candidates. Special students who later wish to be admitted to degree candidacy will be considered on the same basis as other applicants for admission. Admission as a special student carries with it no commitment to accept the applicant as a degree candidate.

DEGREES IN ENGINEERING

Graduates of engineering colleges or scientific schools of recognized standing who are interested in the environmental engineering aspects of public health may be admitted to the Division of Engineering and Applied Physics of the Graduate School of Arts and Sciences as candidates for the degree of Master of Science, Master of Arts, Master of Engineering or Doctor of Philosophy. They may elect appropriate courses in the School of Public Health as a part of the program for these degrees.

For further information write to the Committee on Admissions, Graduate School of Arts and Sciences, Holyoke Center, 75 Mt. Auburn Street, Cambridge 38, Massachusetts.

GRADING SYSTEM

The grading system in effect at the School of Public Health is as follows: A and B are honor grades; C is acceptable; D is passing but of inferior quality; F is failing.

A student cannot qualify for a degree if he fails one or more required courses. However, if he fails only one required course, he may request a re-examination in that course. Re-examination will be given subject to approval of the instructor in the course and of the Committee on Admissions and Degrees, and will normally be given only after a period of additional study or course work, within a period of eight weeks following the initial failure.

A grade recorded as "Incomplete" will be changed to "F" if the course requirements are not satisfactorily fulfilled by the end of the next period or before the comprehensive examination, whichever comes first.

A student must have at least 40 units of course credits to be eligible for the comprehensive examination. If the student fails the comprehensive examination he may request a re-examination. If the request is approved by the Committee on Admissions and Degrees, the re-examination may be taken within a period of one year.

Section III

Content of Courses

CONTENT OF COURSES

INTERDEPARTMENTAL COURSES

Interdepartmental Course, 1a. The Human Community

Lectures and seminars. *Mondays and Fridays, 11-1, Wednesdays, 10-11, first period.* Dr. REED, Dr. LEVINE and associates.

Credit 2.5 units.

One of the six semi-elective courses from which Master of Public Health candidates are required to elect a minimum of 12.5 credit units. Candidates for the degree of Master of Science in Hygiene may also elect this course.

Comprehension of health problems and implementation of health programs depend upon understanding the forms and forces active in community life. This course of instruction deals with demography, social and cultural characteristics of human populations, the organization and behavior of human communities, and their relationship to the environment. The objective of the course is to provide a knowledge of, and a set of concepts dealing with, human populations, interpersonal relationships, cultural values, and social organization, in preparation for the study of public health.

Interdepartmental Course 3b. History and Philosophy of Public Health

Seminars. *Wednesdays, 2-4, second period.* Dr. MAYER and Visiting Lecturers.

Credit 1 unit.

Students will be helped to gain a broad picture of the development of medical sciences, sanitary engineering and demography in Ancient Egypt, Greece and Alexandria, Rome, the Arab and European Middle Ages and during the Renaissance and the Modern Era. This will be followed by discussion of selected historical situations illustrating how available knowledge interacts with political structure, economic status and cultural attitudes to determine the goals of public health and the execution of programs.

Interdepartmental Course 4c,d. Research Methods in Community Health

Lectures and discussions. *Mondays and Saturdays, 11-1, third period; Mondays and Fridays, 11-1, fourth period.* Dr. REED, Dr. LEVINE and associates.

Credit 4 units.

The elective course, offered by members of the Biostatistics and Public Health Practice Departments, is intended primarily for doctoral candidates and other advanced students who require specialized preparation to conduct or administer scientific research on social and community aspects of health, health

HARVARD UNIVERSITY

behavior and health organization. The merits of alternative research designs will be covered by means of lectures, discussions of current research projects, and presentations of students' own research plans. Instruction will cover a range of methods and techniques including survey methods, case and longitudinal studies, as well as relevant statistical techniques, methods of constructing and administering interviews, and other methods of data collection and analysis. Admission is limited and requires the consent of the instructors.

Interdepartmental Course 40a,b,c. Biostatistics and Epidemiology

Lectures, discussions and laboratory. *Tuesdays and Thursdays, 9-11, Saturdays, 9-12, first and second periods; Tuesdays, Thursdays and Saturdays, 9-11, third period.* Dr. WORCESTER, Dr. BELL, Dr. MACMAHON and associates.

Credit 7 units.

Required of Master of Science in Hygiene candidates (except those eligible to take Biostatistics 1a,b and Epidemiology 1a,b).

Epidemiology and biostatistics are two disciplines essential to the investigations of problems of health and disease at a community level. This course is an attempt to provide integrated teaching in these two subjects to a small group of students without medical background. Biostatistics, demography and epidemiology will be presented. There will be sessions devoted to the medical and biological sciences (e.g. immunology and genetics). A small number of diseases will be covered in detail to show the methods by which our present level of knowledge has been reached and to illustrate the principles of epidemiology. There will be laboratory exercises and demonstrations. Classic, as well as current, literature in epidemiology will be assigned.

Interdepartmental Course 42a,b,c,d. Seminar on Teaching of Preventive Medicine and Public Health

Seminars. Time to be arranged in all four periods, and individual tutorial work. Dr. McKENZIE POLLOCK.

Credit 5 units.

The seminars are designed for the students who are preparing for careers as teachers of preventive medicine and public health. Consideration is given to the subject matter of preventive medicine and public health as they are taught in various parts of the world. Case presentations of the preventive aspects of health problems in individual patients, families and communities are discussed. Tutorial work focusses on improving teaching methods. Visiting specialists lead seminars on particular phases of teaching in preventive medicine and public health.

SCHOOL OF PUBLIC HEALTH

DIVISION OF ENVIRONMENTAL HEALTH SCIENCES AND ENGINEERING

JAMES L. WHITTENBERGER, S.B., M.D., A.M. (hon.), *Head of the Division*

The Division includes the Departments of Industrial Hygiene, Physiology and Sanitary Engineering. The names and titles of the Faculty and Staff members of the Division, and the courses available, are listed in the respective departments.

DIVISIONAL COURSES

Environmental Health 1c. Man's Responses to the Physical Environment

Lectures, demonstrations and field trips. *Mondays, 9-11, Tuesdays and Thursdays, 11-1, third period.* Dr. FERRIS and associates.

Credit 2.5 units.

One of the six semi-elective courses from which Master of Public Health candidates are required to elect a minimum of 12.5 credit units.

Physiologic responses evoked by the physical and chemical attributes of man's environment will be described and the limits of such responses emphasized. Methods for assessing and controlling environmental stresses will be presented. Topics covered will include: temperature, humidity, barometric pressure, ionizing radiation, air pollution, toxicology, illumination, and noise.

This course is intended for Master of Public Health candidates who are not specializing in Industrial Hygiene or Occupational Medicine. It is also open to other students who have had Physiology 1a,b or its equivalent and who have had chemistry and physics at a college level.

Environmental Health 1d. Principles of Water and Food Sanitation

Lectures and demonstrations. *Tuesdays and Thursdays, 11-1, Saturdays, 9-11, fourth period.* Professor FAIR, Professor THOMAS, Professor MORRIS, and Associate Professor STUMM. The hour from 12-1 on Thursdays is a discussion period. It is optional and carries no credit.

Credit 2.5 units.

Required of Master of Public Health and Master of Industrial Health candidates. Candidates for the degree of Master of Science in Hygiene may also elect this course.

This course emphasizes some of the broad engineering principles useful in the control of man's environment. These principles are presented in a manner appropriate to students who have no engineering background. Technics of control are discussed, but are presented as illustrations of principle, not as rule-of-thumb procedures that the student is expected to learn by rote. One

HARVARD UNIVERSITY

or two field visits are made to show the application of principles in practice.

The objective of the course is not the conversion of the student into an engineer, ready to design water works, or develop milk-pasteurizing plants, but rather to prepare him to advise, to cooperate with, and to understand the people who are to do the job. It also acquaints him with the nature and extent of the sanitary problem, with what can be and has been accomplished by water and food sanitation, and with what may be expected to be done in the future.

The topics considered include: water supply and purification; the sanitation of swimming pools and bathing beaches; sewerage and sewage treatment; refuse and nightsoil collection and disposal; and food, milk and shellfish sanitation.

Environmental Health 2a,b. Radiological Hygiene

Lectures, laboratories and field trips. *Tuesdays, 12-1, Wednesdays, 2-5, Fridays, 8-9, first and second periods.* Assistant Professor SHAPIRO and Staff of the Division.

Credit 4 units.

This course will present the essentials of atomic and radiation physics as an introduction to the evaluation of health hazards from ionizing radiation. Students with adequate background in physics and mathematics may be excused from the lecture portion of the course. Credit for the laboratory alone is 1.5 units.

Environmental Health 2c,d. Radiation Dosimetry

Lectures, laboratories and field trips. *Mondays, 2-5, Wednesdays, 9-10, third period; Tuesdays, 9-11, Fridays, 2:30-5:30, fourth period.* Assistant Professor SHAPIRO.

Credit 3 units.

This course deals with more advanced radioactivity instrumentation and measurement. Typical examples of bio-assays and radiation dosage measurement will be studied. During the fourth period the laboratory exercises will be held in conjunction with Physiology 40d.

Environmental Health 3a,b and 3c,d. Occupational Medical Clinics

Clinics, Peter Bent Brigham Hospital, *Saturdays, 10-12, first and second periods.* Dr. MILLER.

Clinics, Lemuel Shattuck Hospital, *Thursdays, 3-5, third and fourth periods.* Dr. TYLER.

Credit 1 unit for each clinic series.

Occupational Medical Clinics at teaching hospitals will be offered in all four

SCHOOL OF PUBLIC HEALTH

periods. The clinics at the Peter Bent Brigham Hospital and the Lemuel Shattuck Hospital will emphasize the effect that non-occupational disease may have on the working capacity of the individual.

The clinics are limited to physicians and will not be offered if less than four enroll.

Environmental Health 4c,d. Occupational Medical Clinics

Clinics, Massachusetts General Hospital, *Tuesdays, 3-5, third and fourth periods.* Dr. HARDY.

Credit 1 unit.

These clinics are concerned with diseases due to occupation, such as silicosis, beryllium intoxication, coal miner's pneumoconiosis, lead poisoning, etc.

The clinics are limited to physicians and will not be offered if less than four enroll.

Environmental Health 5a,b,c,d. Aviation Health and Safety

Seminars. *Wednesdays, 11-1, in all four periods.* Dr. McFARLAND.

Credit 1 unit each period.

The purpose of these seminars is to integrate the work in the basic courses of public health and preventive medicine with the specialized problems of aviation health and safety. A series of round table discussions is arranged throughout the year, led by the students, the instructor, and various biological and medical specialists in the University.

Admission is by permission of the instructor.

Environmental Health 6c,6d. Human Factors in Occupational Performance and Safety

Lectures and demonstrations. *Fridays, 9-11, third and fourth periods.* Dr. McFARLAND.

Credit 1 unit in each period.

In the third period, the lectures and discussions emphasize the application of experimental psychology, anthropology, and biotechnology to the problems of occupational performance and adjustment. Consideration is given to the matching of psychological and physical abilities to job requirements. Emphasis is placed on the importance of designing equipment and work practices in terms of human capabilities and limitations, including those related to fatigue, aging, and environmental stress. In the fourth period the lectures and seminars explore interdisciplinary methods in the analysis and prevention of accidents and injuries. While the major emphasis is on occupational safety, the prevention of other types of accidents is also included.

With permission of the instructor, either period may be taken separately.

HARVARD UNIVERSITY

Environmental Health 7d. Occupational Medicine

Lectures. *Tuesdays and Thursdays, 9-11, fourth period.* Dr. FERRIS and Dr. WILKINS.

Credit 2 units.

The topics in this course will include the administration and organization of occupational medical departments, physical examinations, rehabilitation, counselling, and medico-legal problems.

Environmental Health 8c,d. Community Air Pollution

Lectures, demonstrations and seminars. *Wednesdays, 11-1, third and fourth periods.* Staff of the Division.

Credit 2 units.

An advanced lecture and seminar course for students in industrial hygiene, sanitary engineering and environmental physiology. It will cover micro-meteorology and its relation to air pollution, aero-allergens, community air pollution control and appraisal, and solid waste disposal by incineration.

Environmental Health 15a,b. Divisional Seminar on Health-Related Aspects of Water Resource Management

Seminars. *Wednesdays, 11-1, first and second periods.* Professor FAIR and Staff of the Division.

Credit 1 unit in each period.

Selected topics in water supply, treatment, and distribution; in waste-water collection, treatment, and disposal; and in nightsoil collection, treatment, and disposal.

This seminar is intended for students who wish to pursue specialized topics in water resource management. Topics for discussion will be selected to meet the interests of the participants. There may be occasional guest speakers, visits to installations of interest, and presentation of educational media pertinent to the field.

SCHOOL OF PUBLIC HEALTH

DEPARTMENT OF INDUSTRIAL HYGIENE

LESLIE SILVERMAN, S.B., S.M., S.D., *Professor of Engineering in Environmental Hygiene and Head of the Department*

CHARLES R. WILLIAMS, PH.D., *Associate Professor of Applied Industrial Hygiene*

GEORGE F. WILKINS, A.B., M.D., *Associate Clinical Professor of Occupational Medicine*

CHARLES E. BILLINGS, S.M., *Associate Professor of Industrial Hygiene Engineering*

RICHARD DENNIS, S.M., *Assistant Professor of Industrial Hygiene*

JACOB SHAPIRO, S.B., S.M., PH.D., *Assistant Professor of Biophysics in Environmental Hygiene*

WILLIAM A. BURGESS, S.M., *Assistant Professor of Environmental Health and Safety Engineering*

ALLEN D. BRANDT, S.D., *Visiting Lecturer on Industrial Hygiene Engineering*

NATHAN VAN HENDRICKS, S.B., CHEM.E., *Visiting Lecturer on Industrial Hygiene Engineering*

LAWRENCE S. COOKE, *Visiting Lecturer on Industrial Hygiene*

JAMES M. AUSTIN, M.A., S.D., *Visiting Lecturer on Meteorology and Air Pollution*

ALLEN L. CUDWORTH, S.M., *Visiting Lecturer on Control of Noise in Industry*

ASHLEY ST. CLAIR, A.B., LL.B., *Visiting Lecturer on Workmen's Compensation*

MELVIN W. FIRST, S.D., *Senior Research Associate in Industrial Hygiene Engineering*

ROBERT A. GUSSMAN, S.B. IN MECH.ENGIN., S.M. IN I.H., *Research Associate in Industrial Hygiene Engineering*

GEORGE C. KRUSEN, II, S.M., *Research Associate in Industrial Hygiene Engineering*

CHARLES A. MITCHELL, S.M., *Assistant in Industrial Hygiene*

THEODORE GEORGIADIS, B.S., *Research Fellow in Industrial Hygiene*

HARRIET L. HARDY, A.B., M.D., *Lecturer on Medicine*

ALBERT O. SEELER, A.B., M.D., *Clinical Associate in Medicine*

JOSEPH M. MILLER, A.B., M.D., M.P.H., *Instructor in Medicine*

Industrial Hygiene 1c,d. Basic Problems in Occupational Health and Industrial Environments

Lectures, laboratories, demonstrations and field trips. *Mondays and Saturdays, 11-1, Wednesdays, 1:30-5, third period; Mondays and Fridays, 11-1,*

HARVARD UNIVERSITY

Wednesdays, 1:30-5, fourth period. Dr. SILVERMAN, Dr. FERRIS and Dr. SEELER.

Credit 7 units.

A course of lectures, demonstrations and inspections showing the relation of working conditions to health with special reference to control of industrial hazards, and of adverse conditions of temperature and humidity, the prevention, diagnosis and treatment of industrial disability and diseases, and workmen's compensation. (This course is classified as Eng. 282.)

Industrial Hygiene 2a,b. Industrial Air Analysis

Laboratory work. *Tuesdays and Thursdays, 2-5, first and second periods.* Assistant Professor DENNIS and Dr. WILLIAMS.

Credit 4 units.

Determination and interpretation of adverse conditions found in work places of all types, such as factories and mills, and in assembly halls; methods employed in determining physical properties of the air, such as temperature, humidity, and air motion; atmospheric impurities and normal constituents of the air — gases, dusts, bacteria, and pollens; efficiencies of protective devices such as masks and respirators.

Course 2a,b (Eng. 281) is intended for public health engineers and physicians enrolled in the Industrial Health program.

Industrial Hygiene 6a,b (Engineering 280). Industrial Ventilation and Air Conditioning

Lectures and laboratories. *Mondays and Fridays, 10-11, Fridays, 2-5, first and second periods.* Assistant Professor BURGESS.

Credit 4 units.

Selected topics in industrial ventilation and air conditioning of interest to students in mechanical and environmental health engineering and industrial hygiene. Primarily for engineers and physical science majors.

Industrial Hygiene 7c,d (Engineering 286). Aerosol Technology

Lectures and laboratory work, at the School of Public Health. *Tuesdays and Thursdays, 2:30-5:30, third and fourth periods.* Associate Professor BILLINGS.

Credit 4 units.

A general discussion of aerosol properties and their behavior. An advanced course for engineers interested in air pollution evaluation and control.

Prerequisite: Industrial Hygiene 2a,b.

SCHOOL OF PUBLIC HEALTH

Industrial Hygiene 8c,d (Engineering 287). Radiological Engineering

Lectures and laboratory work. Given at the School of Public Health. Four hours a week, time to be arranged, third and fourth periods. Assistant Professor SHAPIRO.

Credit 4 units.

Advanced and applied radiation protection problem discussion; the development of radiological design criteria for operations in radiation laboratories; establishment and application of reactor safeguards standards; emergency planning and control of radioactive wastes.

Prerequisites: Physics 101, Physics 111 or Environmental Health 2a,b.

Industrial Hygiene 17a,b,c,d.

Tutorial Program (Reading or Research). Time and credit to be arranged.

Reading or research assignments for individual tutorial work at a Master's degree level will be provided for qualified students in the fields of industrial hygiene, industrial ventilation, aerosol technology, radiological hygiene and air pollution control. Enrollment will be made by arrangement with the Head of the Department.

Industrial Hygiene 20. Research

Properly qualified students at the Post-master's level or who have been accepted as doctoral candidates will be given opportunity to pursue independent research work on problems of industrial hygiene including occupational disease, toxicology, industrial ventilation, aerosol technology, air pollution control and radiological hygiene. Enrollment will be by arrangement with the Head of the Department.

HARVARD UNIVERSITY

DEPARTMENT OF PHYSIOLOGY

JAMES L. WHITTENBERGER, S.B., M.D., A.M. (hon.), *James Stevens Simmons Professor of Public Health, Professor of Physiology and Head of the Department*

ROSS A. MCFARLAND, A.B., PH.D., S.D. (hon.), *Professor of Environmental Health and Safety*

JERE MEAD, S.B., M.D., *Associate Professor of Physiology*

BENJAMIN G. FERRIS, JR., A.B., M.D., *Associate Professor of Environmental Health and Safety*

EDWARD P. RADFORD, JR., M.D., *Associate Professor of Physiology*

WILLIAM H. FORBES, DR. PHIL., M.D., *Lecturer on Physiology*

MARY O. AMDUR, S.B., PH.D., *Assistant Professor of Physiology*

HARBEN J. BOUTOURLINE-YOUNG, M.B., B.S., M.D., *Assistant Professor of Physiology* (Absent 1962-63)

N. ROBERT FRANK, A.B., M.D., *Assistant Professor of Physiology*

ROLAND C. MOORE, PH.D., *Associate in Industrial Psychology*

RICHARD G. DOMEY, S.B., ED.D., *Associate in Environmental Health and Safety*

WILLEM S. FREDERIK, DR. PHIL., M.D., S.M. IN HYG., *Lecturer on Physiology*

HOWARD W. STOUTD, JR., PH.D., S.M. IN HYG., *Research Associate in Physical Anthropology*

JOHN M. TYLER, A.B., M.D., *Research Associate in Physiology*

JOSEPH MILIC-EMILI, M.D., *Research Fellow in Physiology*

FRANK E. SPEIZER, A.B., M.D., *Research Fellow in Physiology*

JAMES M. TURNER, JR., S.B., M.D., *Research Fellow in Physiology*

JOHN B. LITTLE, A.B., M.D., *Research Fellow in Physiology*

MARY E. BECK, A.B., M.D., *Research Fellow in Physiology*

LEONARD I. KLEINMAN, A.B., M.D., *Research Fellow in Physiology*

JULES R. SCHWABER, A.B., M.D., *Research Fellow in Physiology*

CHARLES D. COOK, A.B., M.D., *Assistant Professor of Pediatrics*

ROBERT G. MONROE, A.B., M.D., *Research Associate in Pediatrics*

Physiology 1a,b. Human Physiology

Lectures, laboratory and demonstrations. *Tuesdays, 11-12, Thursdays, 11-1, first and second periods.* Dr. MEAD, Dr. FRANK and associates.

Credit 3 units.

This course is intended for students who lack a background in physiology.

SCHOOL OF PUBLIC HEALTH

The time will be divided approximately equally among cellular physiology, organ and organ system physiology, and function of the total organism. The purpose of the laboratory exercises will be to give the students some experience with problems of observing living systems.

Prerequisites: College courses in physics, chemistry and mathematics.

Physiology 2c. Environmental Physiology

Lectures and conferences. *Tuesdays and Thursdays, 11-12, third period.* Dr. FORBES.

Credit 1 unit.

This course is intended for students specializing in occupational health and will take up in greater detail some of the subjects considered in Environmental Health 1c.

In general students who take Environmental Health 1c should not take Physiology 2c.

The course will begin with a discussion of natural and artificial environments with particular reference to industrial workers. It will then take up human tolerance of high and low temperatures, physical fitness and its measurement, muscular work and the efficiency of various types of muscular work in industry, fatigue, and the effects of age.

Master of Science in Hygiene candidates who wish to take this course must have had Physiology 1a,b or the equivalent.

Physiology 3c,d. Principles of Toxicology

Lectures and laboratory work. *Tuesdays and Thursdays, 1:30-2:30, Fridays, 2-5, third period; Mondays and Fridays, 1:30-2:30, fourth period.* Drs. AMDUR and RADFORD.

Credit 2.5 units.

This course will present an introduction to the effects of toxic chemical agents on living organisms with particular reference to experimental techniques of assessing toxicity. Several classes of toxic agents will be studied with respect to mechanisms of action on living tissues, functional changes resulting from exposure, and methods of evaluating the damage produced.

Prerequisite: Physiology 1a,b or equivalent.

Physiology 4d. Special Topics in Respiratory Physiology

Lectures. Two hours a week, time to be arranged, fourth period. Dr. MEAD and associates.

Credit 1 unit.

This course will cover special topics in respiratory physiology, according to the interests of the students. It is intended primarily for students in the

HARVARD UNIVERSITY

aviation medicine program. Other students who are specializing in environmental health may enroll with the consent of the instructor.

Physiology 17a,b,c,d. Tutorial Program

Time and credit to be arranged.

Opportunities are provided for tutorial work at a master's degree level in the fields of respiratory physiology, toxicology, environmental hygiene and occupational medicine.

Physiology 20. Research

Doctoral candidates and other properly qualified students may undertake laboratory or field research by arrangement with the Head of the Department.

Physiology 40d. Radiation Biology

Lectures and laboratory work. *Tuesdays and Thursdays, 1:30-2:30, Fridays, 2:30-5:30, fourth period.* Dr. RADFORD.

Credit 1.5 units.

This course will deal with the biological effects of ionizing radiation. Included will be discussion of radiation biochemistry, mutagenic properties of radiation, acute vs. chronic effects and characteristics of internal and external radiation exposure. During this period students will carry out radiobiological experiments in the laboratory.

Prerequisites: Environmental Health 2a,b, Physiology 1a,b, or equivalents.

SCHOOL OF PUBLIC HEALTH

DEPARTMENT OF SANITARY ENGINEERING

J. CARRELL MORRIS, S.B., PH.D., A.M. (hon.), *Gordon McKay Professor of Sanitary Chemistry and Acting Head of the Department*

GORDON M. FAIR, S.B., S.M. (hon.), DR. ING. (hon.), DR. (hon.), *Abbott and James Lawrence Professor of Engineering, Gordon McKay Professor of Sanitary Engineering*

HAROLD A. THOMAS, JR., S.D., *Gordon McKay Professor of Civil and Sanitary Engineering*

WERNER STUMM, DR. PHIL., A.M. (hon.), *Associate Professor of Applied Chemistry*

CHARLES WALCOTT, PH.D., *Assistant Professor of Applied Biology*

ROBERT P. BURDEN, S.D., *Research Fellow in Sanitary Engineering*

See listing of Environmental Health Courses on page 41 for offerings of this Department in the School of Public Health (Environmental Health 1d and 15a,b).

The following courses of instruction offered in the Division of Engineering and Applied Physics of the Graduate School of Arts and Sciences are open to properly qualified students:

Engineering 270a. Water Resource Engineering. Professor FAIR.

Engineering 270b. Water Resource Engineering. Professor FAIR.

Engineering 271a. Water Chemistry. Associate Professor STUMM.

Engineering 271b. Processes in Water and Waste Treatment. Professor MORRIS.

Engineering 272b. Chemistry and Biology of Natural Waters. Associate Professor STUMM and Assistant Professor WALCOTT.

Engineering 273. Water Resource Systems. Professor THOMAS. (To be omitted in 1962-63).

Engineering 274. Biological Systems. Assistant Professor WALCOTT.

Engineering 275. Seminar: Industrial Water and Wastes. Mr. MOORE.

Engineering 276. Advanced Techniques for Water Analysis. Associate Professor STUMM.

Engineering 277. Surface Chemistry. Associate Professor STUMM.

Engineering 278. Applied Electrochemistry. (To be given in 1963-64).

Engineering 279. Sanitary Biochemistry. Professor MORRIS.

Engineering 292. Chemistry of Nuclear Materials. Professor MORRIS.

HARVARD UNIVERSITY

DEPARTMENT OF BIOSTATISTICS

ROBERT B. REED, PH.D., A.M. (hon.), *Professor of Biostatistics and Head of the Department*

JANE WORCESTER, A.B., DR.P.H., *Professor of Biostatistics and Epidemiology*

MARGARET E. DROLETTE, A.B., M.P.H., *Associate in Biostatistics* (Absent 1962-63)

MARVIN N. GLASSER, B.B.A., M.P.H., S.D. IN HYG., *Associate in Biostatistics and Epidemiology*

PAUL M. DENSEN, A.B., S.D., *Visiting Lecturer on Biostatistics*

YVONNE M. M. BISHOP, B.A., S.M. IN HYG., *Instructor in Biostatistics*

JANE A. MENKEN, A.B., S.M. IN HYG., *Assistant in Biostatistics*

ANTHONY F. BARTHOLOMAY, A.M., S.D. IN HYG., *Assistant Professor of Mathematical Biology*

The teaching aims of the Department may be divided very generally into three categories:

First, it is essential for workers in all branches of public health to be able to draw justified conclusions from numerical data and to base logical action on these conclusions. This applies to the administrator who must evaluate problems and the results of his activities, as well as to the epidemiologist and the research worker who must apply statistical technics to their laboratory and field problems. The required course in Biostatistics is therefore designed to give a minimum command of simple statistical methodology to all students.

Second, it is essential for field and laboratory researchers to be able to use statistical methods in planning and analyzing their experiments and problems. Elective courses are designed to provide an introduction to methodology in this area. These courses are adapted to the needs of students of this School, many of whom have broad background in biological sciences while few have extensive preparation in mathematics. A minimum of mathematical exposition is therefore included in courses intended for students in these categories. Instead the emphasis is on understanding the statistical procedures and the ability to carry out indicated analyses effectively.

Third, there is a smaller group of students particularly interested in pursuing further work along mathematical lines. Their requirements are fulfilled, on the one hand, by the provision of advanced and seminar courses in the Department; on the other by the offerings of the Department of Statistics in the Graduate School of Arts and Sciences. Students with mathematical backgrounds who are working in biology, or medical scientists with an understanding of basic mathematics, will be interested in a teaching and research program in Mathematical Biology being developed by Dr. Bartholomay at

the Medical School. Properly qualified students at the School of Public Health may arrange for instruction in this area of knowledge.

Biostatistics 1a,b. Principles of Biostatistics

Lectures and discussions. *Tuesdays and Thursdays, 11-12, first and second periods.*

Laboratory. *Mondays, 2-5, first and second periods.* Staff of the Department.
Credit 3.5 units.

Required of Master of Public Health candidates.

This course is designed for candidates with medical background or other similar thorough preparation in the biological sciences (for the introductory course for other candidates, see page 40). Lectures, discussions and laboratory exercises introduce the student to demographic concepts: the structure of the population and the use of the life table; the nature and composition of rates and their use from administrative and epidemiological points of view. The course forms an introduction to the theory of measurements and distributions, including the testing of significance of differences and the interaction of variables. Finally, the student is introduced to basic concepts of probability and association, sampling technics and construction of controlled experiments such as clinical trials.

Biostatistics 2c,d. Statistical Methods in Research

Lectures, discussions and laboratory. *Tuesdays and Thursdays, 2-5, third and fourth periods.* Dr. REED and Dr. WORCESTER.

Credit 4 units.

This course, a continuation of Biostatistics 1a,b, introduces the student to technical statistical procedures important in problems of laboratory and field research. Topics included are further considerations of probability and correlation together with an introduction to procedures used in the planning of experiments including variance analysis, non-parametric methods, dosage response and maximum likelihood. Statistical technics introduced in advanced courses in epidemiology will be amplified and supplemented.

Prerequisites: Basic preparation in statistics and epidemiology.

Biostatistics 15a,b,c,d. Departmental Seminar

Seminars. *Wednesdays, 11-1, all four periods.* Staff of the Department.

Credit 1 unit in each period.

This course is designed to afford opportunity for the discussion of statistical problems arising in the course of the work of students or staff in this or other Departments, or outside the School. Problems of interest to other Departments may be discussed at joint meetings of the specialty seminars concerned.

HARVARD UNIVERSITY

Some sessions of the seminar may be devoted to current literature. Development of topics will follow chiefly the lines of interest of students and of staff members.

Biostatistics 17c,d. Tutorial Program

Time and credit to be arranged, third and fourth periods.

An opportunity for tutorial work at masters' level will be given interested students. This will involve not only work in statistical fields, but can include problems arising in the course of special programs in other departments. Schedules and credit may therefore be arranged jointly with such other departments.

Biostatistics 20. Research

Individual guided research at doctoral levels, for candidates for the Doctor of Public Health, Doctor of Science in Hygiene or other doctoral degrees. The work may be part of the program for a doctorate in this Department or may be integrated with doctoral research in others.

DEPARTMENT OF DEMOGRAPHY AND HUMAN ECOLOGY

JOHN C. SNYDER, A.B., M.D., *Henry Pickering Walcott Professor of Microbiology, Acting Head of the Department*

WILLIAM H. FORBES, M.D., PH.D., *Lecturer on Physiology, Assistant to the Dean, and Faculty Advisor to Foreign Students*

JOHN B. WYON, M.B., B.CH., M.P.H., *Assistant Professor of Population Studies*

ANSLEY J. COALE, PH.D., *Visiting Lecturer in Demography*

RONALD FREEDMAN, PH.D., *Visiting Lecturer in Demography*

The past decade has been marked by the emergence of many new nations and the achievement of self government by a considerable proportion of the population of the world. With these changes have come insistent demands for economic development, for better standards of living, for education, and for improved health conditions. In regions where health measures have been introduced with success, the effects on mortality rates have been striking but birth rates have not decreased concomitantly. The conviction is spreading that the effective application of public health measures in certain areas will result in increases in the population density of such magnitude that economic and social advances will be vitiated.

The Harvard School of Public Health has been involved in studies on population problems since 1953 through an investigation conducted by its Department of Epidemiology in collaboration with the government of India, the Ludhiana Christian Medical College, and The Rockefeller Foundation. These initial efforts have strengthened the view that the information is

SCHOOL OF PUBLIC HEALTH

inadequate pertaining to the basic factors which determine changes in the density and quality of populations. It is the conviction of the administration of the Harvard School of Public Health that schools of public health and their parent universities should participate actively in the search for the knowledge which communities and nations must have in order to advance towards their goals in education, economic development and health. With this responsibility in mind, the administration of the School has concluded that population problems are foremost among the subjects appropriate for study by the profession of public health. As a step toward meeting this responsibility, a new department is now established in the Faculty of Public Health to conduct research and to provide instruction in population problems and those aspects of human ecology which are related to man's efforts to control and change his social environment. When adequate financial support has been obtained, the new department is expected eventually to include experts in biology, social anthropology, genetics, demography, in addition to representatives of the public health sciences.

The activities of the new Department of Demography and Human Ecology will be international in scope, and, as in other departments in the Faculty of Public Health, will be concerned with the advancement of knowledge through observation and experiment, placing emphasis partly on the acquisition of knowledge for its own sake and partly on the application of knowledge for the accomplishment of social goals.

During the academic year 1962-63, there will be no formal courses of instruction offered by the new Department. Informal tutorial work, however, will be available to students and research fellows who are qualified to participate in the demographic analyses currently in progress.

HARVARD UNIVERSITY

DEPARTMENT OF EPIDEMIOLOGY

BRIAN MACMAHON, M.D., PH.D., D.P.H., S.M. IN HYG., *Professor of Epidemiology and Head of the Department*

JANE WORCESTER, A.B., DR.P.H., *Professor of Biostatistics and Epidemiology*

THOMAS F. PUGH, M.D., M.P.H., *Associate Clinical Professor of Epidemiology*

ALBERT DAMON, A.B., PH.D., M.D., *Associate Professor of Epidemiology*

GEORGE B. HUTCHISON, A.B., M.D., M.P.H., *Associate Professor of Epidemiology*

MARVIN N. GLASSER, B.B.A., M.P.H., S.D. IN HYG., *Associate in Biostatistics and Epidemiology*

CONRAD WESSELHOEFT, M.D., *Visiting Lecturer on Infectious Diseases*

ERNEST M. GRUENBERG, A.B., M.D., DR.P.H., *Visiting Lecturer on Epidemiology*

MORRIS SIEGEL, M.D., M.P.H., *Visiting Lecturer on Epidemiology*

VAUN A. NEWILL, S.B., M.D., S.M. IN HYG., *Visiting Lecturer on Epidemiology*

EVA J. SALBER, M.B., CH.B., D.P.H., M.D., *Senior Research Associate in Epidemiology*

ASCHER J. SEGALL, M.D., M.P.H., DR.P.H., *Research Associate in Epidemiology*

SAMUEL G. MCCLELLAN, A.B., M.D., M.P.H., *Research Associate in Epidemiology*

DAVID C. POSKANZER, A.B., M.D., M.P.H., *Research Associate in Epidemiology*

LOUIS WEINSTEIN, S.M., PH.D., M.D., *Lecturer on Infectious Diseases*

The formal courses offered by the Department of Epidemiology are designed primarily for the Master of Public Health curriculum. Epidemiology 1a,b deals with epidemiologic principles and methods as they apply to all varieties of disease, infectious and non-infectious, acute and chronic. Systematic reviews of the infectious diseases are given in Microbiology and Tropical Public Health 1a,b,c and of the non-infectious diseases in Epidemiology 2c,d. Epidemiology 3b, 4c,d and 5d are elective courses for students with special interests.

A major objective of the Department is to encourage original investigation in epidemiology. In addition to tutorial work in a specific research problem (Epidemiology 17), opportunity for experience in study design is provided in Epidemiology 15.

A training program in epidemiology supported by the National Institutes of Health, U.S. Public Health Service, provides opportunities for training in epidemiology at a variety of levels (see page 103). In the selection of graduate candidates for this program, preference will be given to those intending to proceed to investigative work at the doctoral level.

SCHOOL OF PUBLIC HEALTH

Epidemiology 1a,b. Principles of Epidemiology

Lectures. *Tuesdays and Thursdays, 10-11, first period; Tuesdays, 10-11, Thursdays, 9-11, second period.* Dr. MACMAHON and associates.

Credit 2.5 units.

Required of Master of Public Health candidates.

Lectures on the principles, purposes and methods of epidemiology. Illustration is by reference to classic epidemiologic investigations and through laboratory exercises.

Epidemiology 2c,d. Epidemiology of Non-Infectious Disease

Lectures. *Wednesdays, 9-10, Fridays, 11-1, third period; Mondays and Wednesdays, 9-11, fourth period.* Dr. MACMAHON and associates.

Credit 3 units.

One of the six semi-elective courses from which Master of Public Health candidates are required to elect a minimum of 12.5 credit units. Candidates for the degree of Master of Science in Hygiene may also elect this course.

A course concerned with the etiology of those diseases not at present known to be associated with infectious agents. Special attention is given to the mental disorders, to the degenerative and neoplastic diseases, and to the methodologic difficulties associated with the epidemiologic investigation of chronic diseases. Through illustrative studies, problems such as the establishment of criteria for definition, the description of disease course, and the investigation of causal relationships extending over long time periods are discussed. Systematic reviews of the present state of knowledge regarding certain disease states are presented.

Epidemiology 3b. Clinical Problems in Infectious Disease

Lectures. *Thursdays, 2-3; Clinics, Thursdays, 3:30-5, second period.* Dr. WESSELHOEFT and Dr. WEINSTEIN.

Credit 1 unit.

Problems of diagnosis, treatment and control of the common acute communicable diseases of temperate climates.

Epidemiology 4c,d. Human Heredity

Lectures. *Mondays and Wednesdays, 2-3, third and fourth periods.* Dr. HUTCHISON.

Credit 2 units.

Lectures on the methodology of investigating problems of human heredity and on the current state of knowledge of certain specific areas in this field. Introductory lectures will review the principles of classical genetic theory with particular emphasis on theory peculiar to human genetics.

The methods for investigating family patterns of heredity, twin studies,

HARVARD UNIVERSITY

effects of consanguinity and heterosis, gene linkage and the inheritance of continuous traits, such as height and IQ, will be presented. Students will be given problems illustrating these methods. Current knowledge of the heredity of such factors as mongolism, pyloric stenosis, and the human blood groups will be reviewed.

Epidemiology 5d. Epidemiologic Problems in Infectious Disease

Conferences, seminars, laboratory exercises. *Tuesdays and Thursdays, 9-11, fourth period.*

Credit 2 units.

A course given by the staffs of the Departments of Microbiology, Epidemiology and Tropical Public Health providing experience in solving epidemiologic problems in communicable disease.

Epidemiology 15a,b,c,d. Departmental Seminar

Seminars. *Wednesdays, 11-1, all four periods.* Staff of the Department.

Credit 1 unit in each period.

This course is for students with a major interest in epidemiology. Participants will select an epidemiologic problem in apparent need of investigation, and will prepare and present for group discussion a summary of the present status of knowledge of the problem and the design of a study directed towards advancement of present knowledge.

Admission subject to the approval of the Head of the Department.

Epidemiology 17a,b,c,d. Introduction to Research

Participation in departmental research in close association with a staff member. Time and credit by arrangement with the Head of the Department.

Prerequisite: Epidemiology 15.

Epidemiology 20. Research

Research for doctoral candidates.

SCHOOL OF PUBLIC HEALTH

DEPARTMENT OF MATERNAL AND CHILD HEALTH

WILLIAM M. SCHMIDT, S.B., M.D., A.M. (hon.), *Professor of Maternal and Child Health and Head of the Department*

ELIZABETH P. RICE, A.B., S.M., *Associate Professor of Public Health Social Work*

LEON STERNFELD, S.B., M.D., PH.D., M.P.H., *Associate Clinical Professor of Maternal and Child Health and Deputy Commissioner of Health, Commonwealth of Massachusetts*

EDWARD A. MASON, A.B., M.D., *Assistant Professor of Mental Health*

ISABELLE VALADIAN, M.D., M.P.H., *Assistant Professor of Maternal and Child Health*

DAVID M. KAPLAN, S.M., PH.D., *Associate in Social Work*

HAROLD JACOBZINER, S.B., M.D., M.P.H., *Visiting Lecturer on Maternal and Child Health*

ARTHUR J. LESSER, A.B., M.D., M.P.H., *Visiting Lecturer on Maternal and Child Health*

PAULINE G. STITT, M.D., M.P.H., *Visiting Lecturer on Maternal and Child Health*

SAMUEL B. KIRKWOOD, A.B., M.D., S.D. (hon.), *Visiting Lecturer on Maternal Health*

EDWIN M. GOLD, S.B., M.D., *Visiting Lecturer on Maternal and Child Health*

ALAN F. GUTTMACHER, A.B., M.D., *Visiting Lecturer on Maternal Health*

ZELMA B. MILLER, S.B., PH.D., *Senior Research Associate in Maternal and Child Health*

MIRIAM C. EKDAHL, S.B., S.M. IN S.S., *Assistant in Child Health*

SYLVIA G. KRAKOW, S.B., M.S.W., *Assistant in Social Work*

RUTH A. COWIN, S.B., S.M., *Assistant in Social Work*

CHARLES A. JANEWAY, A.B., M.D., A.M. (hon.), *Thomas Morgan Rotch Professor of Pediatrics*

DUNCAN E. REID, S.B., M.D., A.M. (hon.), *William Lambert Richardson Professor of Obstetrics*

CLEMENT A. SMITH, A.M., M.D., A.M. (hon.), S.D. (hon.), *Associate Professor of Pediatrics at the Boston Lying-in-Hospital*

WILLIAM BERENBERG, A.B., M.D., *Assistant Clinical Professor of Pediatrics*

ROBERT J. HAGGERTY, A.B., M.D., *Associate in Pediatrics*

LONDON SNEDEKER, A.B., M.D., M.P.H., *Instructor in Pediatrics*

HARVARD UNIVERSITY

The teaching program in the Department of Maternal and Child Health is designed to present the principles, major purposes, and methods in maternal and child health. It has three primary objectives:

First, it provides to students in all branches of public health the basic principles underlying the protection of mothers during maternity and of normal and handicapped children. Emphasis is based on total health needs, physical, social, and emotional. Knowledge of health measures and of community services for children and families is also presented.

Second, it provides to students interested in studying maternal and child health more intensively, further knowledge of health problems in this field and the programs and methods developed to serve mothers and children. Program planning, principles of organization, procedures and administration of Maternal and Child Health Services, including organized care of handicapped children, are analyzed. Each student who concentrates in the Department is expected to pursue an independent study of some aspect of maternal and child health which is presented and discussed by the faculty and students in the Department.

Third, it provides to Maternal and Child Health students in doctoral programs, tutorial sessions and guidance in respect to their original investigations in Maternal and Child Health. These investigations are usually related to the Department's research interests.

Two fellowships are available for physicians who have a major interest in Maternal and Child Health. (See Page 102.)

Maternal and Child Health 1b. Principles of Maternal and Child Health

Lectures. *Mondays and Fridays, 9-11, second period.* Dr. SCHMIDT and associates.

Credit 2 units.

One of the six semi-elective courses from which Master of Public Health candidates are required to elect a minimum of 12.5 credit units.

This course presents a systematic review of the principles which underlie programs concerned with maternal and child health, handicapped children, and the related services of child welfare.

Maternal and Child Health 2c,d. Problems and Programs in Maternal and Child Health

Advanced Seminar. *Mondays, 4-6, Fridays, 9-11, third and fourth periods.* Dr. SCHMIDT and associates.

Credit 4 units.

Presentation and discussion of programs in maternal and child health and of services for handicapped children. Selected aspects of programs are

SCHOOL OF PUBLIC HEALTH

examined with particular reference to the methods of administration in relation to program goals.

A sequence of lecture and discussion sessions is included on social problems and available social services for children.

This course is an advanced course for students majoring in Maternal and Child Health but may be elected by other students with the permission of the Head of the Department.

Maternal and Child Health 3c,d. Research Approach to Growth, Development and Health of the Child

Seminars. Two hours a week, time to be arranged, third and fourth periods. Dr. VALADIAN, Dr. REED and associates.

Credit 2 units.

This course deals with the methods for obtaining and evaluating data on child growth, development, and health, and the construction of norms. Particular attention is paid to problems involved in the study of interrelationships between various aspects of the child's progress and between the child and his background and environment.

Illustrative material from the Longitudinal Study of Child Health and Development conducted in this Department since 1930 by Dr. Harold C. Stuart, Professor *Emeritus*, as well as data from other studies in this country and abroad are used.

Admission open to any student subject to approval of instructor.

Maternal and Child Health 15a,b. Departmental Seminar

Wednesdays, 2-4, first and second periods. Staff of the Department.

Credit 2 units.

Seminars on topics of special interest in maternal and child health. Presentations by students and by staff of subjects assigned for critical review. Students' previous experience, research in progress, and current reports in the literature will be drawn upon.

Required of students majoring in Maternal and Child Health.

Maternal and Child Health 17b,c,d. Individual Studies

Time and credit to be arranged, second, third and fourth periods.

Students majoring in Maternal and Child Health will devote time to be arranged to individual work under guidance. Each program will be arranged between the student and advisor during the fall term, and approved in advance by the Head of the Department. In general, such studies will involve a review of the literature, field study, and a paper reporting on the work done.

Students not majoring in Maternal and Child Health may also elect to carry on a study in Maternal and Child Health with permission of the Head of the Department.

HARVARD UNIVERSITY

Maternal and Child Health 20. Research

Students at the doctoral level may undertake research in Maternal and Child Health by arrangement with the Head of the Department.

Maternal and Child Health 30c

Field Study, January 21–February 2, 1963.

Credit 2 units.

Assignments to agencies carrying out maternal and child health programs.

These two weeks of the spring term permit a planned period of study of the day-to-day operation of maternal and child health, crippled children's and other related services of selected official and voluntary agencies. In general, each student will study a single agency during the two-week period, will present questions to the field seminar, will prepare a written report, and will discuss selected questions in the Maternal and Child Health 20,d seminars. The field studies are under the tutorial guidance of the Department, with the cooperation of staff members of public health, social and other community agencies. Required for students majoring in Maternal and Child Health.

Additional Field Study

Students who are accepted for admission and who do not have sufficient experience in Maternal and Child Health may be required to have a period of field study, usually not less than two months, before registration. Students will be encouraged to spend two months, at the end of the academic year, on a field assignment to be arranged for each student by the staff of the Department.

SCHOOL OF PUBLIC HEALTH

DEPARTMENT OF MICROBIOLOGY

JOHN C. SNYDER, A.B., M.D., *Henry Pickering Walcott Professor of Microbiology and Head of the Department*

GEOFFREY EDSALL, M.D., *Professor of Applied Microbiology*

EDWARD S. MURRAY, A.B., M.D., M.P.H., *Associate Professor of Microbiology and Assistant Physician to University Health Services*

SAMUEL D. BELL, JR., A.B., M.D., M.P.H., *Associate Professor of Microbiology*

ROBERT S. CHANG, B.S.C., M.D., S.D. IN HYG., *Associate Professor of Microbiology*

ROBERT A. MACCREADY, S.B., M.D., *Associate in Microbiology and Director of Diagnostic Laboratories, Department of Public Health of Massachusetts*

JAMES A. MCCOMB, D.V.M., *Associate in Public Health Immunology and Director of Biologic Laboratories, Department of Public Health of Massachusetts*

ROBERT B. PENNELL, S.M., PH.D., *Lecturer on Immunology*

HERALD R. COX, A.B., S.D., S.D. (hon.), *Visiting Lecturer on Microbiology*

ROBERT J. HUEBNER, M.D., *Visiting Lecturer on Microbiology*

JOHN H. HANKS, S.B., PH.D., *Visiting Lecturer on Microbiology*

CHARLES H. RAMMELKAMP, M.D., *Visiting Lecturer in Microbiology*

CATHARINE ATWOOD, A.B., *Instructor in Public Health Bacteriology*

NADIM A. HADDAD, B.A., M.D., M.P.H., *Research Associate in Microbiology*
(Absent 1962-63)

JOHN W. VINSON, S.B., S.D. IN HYG., *Research Associate in Microbiology*

ROGER L. NICHOLS, A.B., M.D., *Research Associate in Microbiology* (Absent 1962-63)

DOROTHY E. MCCOMB, S.B., *Assistant in Microbiology*

LEO LEVINE, S.B., *Assistant in Microbiology*

FATHALI NAZARI, M.D.V., *Research Fellow in Microbiology*

TOSHIRO SHIOMI, B.M., M.D., *Research Fellow in Microbiology*

HERMAN POLET, M.D., *Research Fellow in Microbiology*

The Department of Microbiology is concerned with the bacteria, rickettsiae, and viruses which cause the principal communicable diseases of public health importance. The staff members have many interests in common with the Departments of Epidemiology and Tropical Public Health. The courses in microbiology are intended primarily for students with a background in the medical and biological sciences.

HARVARD UNIVERSITY

The basic course, Microbiology — Tropical Public Health 1a,b,c, is designed to provide the students in the Master of Public Health program with the factual information and the principles of microbiology and parasitology which are essential to a general understanding of the field of public health.

The advanced courses of the department are planned for students whose major interests lie in some aspect of the communicable diseases. The titles and descriptions as listed below indicate the scope of the instruction offered by the department.

Students who are interested in learning research technics and in undertaking original investigation may register for Microbiology 17 during their first year, or Microbiology 20 after they have acquired technical skill in handling pathogenic microorganisms. These two courses provide the opportunity to work in close association with a member of the staff on a current research problem. Present departmental interests include the rickettsiae and certain viruses; the biological aspects of host-parasite relations, and the properties of human cells in tissue culture; and immunological problems, including statistical and field assay technics. Entomological problems of certain types are also within the scope of the research interests and facilities of the department.

Microbiology and Tropical Public Health 1a,b,c. Ecology and Epidemiology of Infectious Diseases

Lectures, seminars, conferences and laboratory exercises. *Tuesdays, Wednesdays and Thursdays, 9-10, Fridays, 2-5, first period; Tuesdays, Wednesdays and Saturdays, 9-10, Fridays, 2-5, second period; Tuesdays and Thursdays, 9-11, Wednesdays, 10-11, third period.* Dr. SNYDER, Dr. WELLER and staff of the two Departments.

Credit 6 units.

One of the six semi-elective courses from which Master of Public Health candidates are required to elect a minimum of 12.5 credit units.

This course is under the general direction of Drs. Snyder and Weller, with the collaboration of the staff of the Departments of Microbiology, Tropical Public Health and Epidemiology. The purpose of the course is to provide students in the Master of Public Health program with the basic knowledge of the communicable and infectious diseases, including the relevant ecologic factors which pertain directly to their prevention and control.

Microbiology and Tropical Public Health 1a,b,c is designed for students who have had most of the courses given in the first two years of medical school or their equivalent. The exercises include discussions of the present status of infectious diseases in tropical and temperate climates and the technics available for study of microorganisms and parasites, with special reference to recent methods which have opened a new era in microbiology. The course

emphasizes the principal diseases of public health importance. The subjects are presented by etiologic agent, including protozoa, helminths, viruses, rickettsiae, spirochetes and bacteria.

Approximately two-thirds of the time will be devoted to lectures and one-third to conferences, seminar discussions, and laboratory exercises. In the laboratory the student is expected to acquire an understanding of the potentialities as well as the limitations of pertinent public health laboratory procedures.

Microbiology 2b. Current Research in Microbiology

Tuesdays, 3-5, second period. Dr. SNYDER.

Credit 1 unit.

This course is arranged for the students who are concentrating in microbiology, epidemiology or tropical public health. Important papers from current periodicals on topics of general interest are assigned to the students for presentation. These papers are reviewed critically in respect to evaluation of the experimental work, analysis of the results, organization of the manuscripts, and clarity of presentation.

The purpose of the course is to develop the ability of the students to read the literature analytically and to plan their own work and manuscripts effectively.

Microbiology 11c. Public Health Laboratory Procedures

Lectures, seminars, and laboratory exercises. *Mondays and Fridays, 2-5, Wednesdays, 2-3, third period.* Dr. MURRAY, Dr. CHANG, Dr. BELL and Dr. MACCREADY.

Credit 2 units.

This course provides the opportunity to become familiar with the technics in use by public health laboratories for the diagnosis of the common bacterial and viral diseases. Some of the exercises are devoted to methods recently developed for the study of various microorganisms. The exercises are designed for orientation of the epidemiologist as well as the microbiologist, with particular reference to the potentialities and limitations of laboratory technics in the conduct of field investigations of communicable diseases.

Short exercises illustrate the important principles of tests in serology and bacteriology, and the students themselves inoculate embryonated eggs and animals by various routes, prepare diagnostic antigens, and perform neutralization tests and red cell agglutination tests.

Limited to fourteen students who are enrolled in Microbiology — Tropical Public Health 1a,b,c.

HARVARD UNIVERSITY

Microbiology 12c. Applied Immunology: Biological Products in Public Health

Seminars and laboratory demonstrations at the Institute of Laboratories of the Massachusetts Department of Public Health. Time to be arranged, third period. Dr. EDSALL and staff of the Institute of Laboratories.

Credit 1 unit.

This course deals with the immunological principles underlying the preparation, evaluation and use of serums, vaccines and other biologic products used in public health practice. The design and interpretation of laboratory and field tests of biologic products, the estimation of their safety and effectiveness, and related questions will be discussed. Specific problems of current importance will be reviewed by participants in the course.

Opportunities are offered properly qualified students for original work at the Institute in problems of public health immunology with credit for Microbiology 17 or 20 to be arranged with the Head of the Department.

Microbiology 13d. Rickettsial and Viral Diseases of Public Health Importance

Lectures, laboratory exercises, and seminars. *Mondays and Fridays, 2-5, fourth period*, and four hours per week individual laboratory work. Dr. CHANG, Dr. BELL and Dr. MURRAY.

Credit 3 units.

The purpose of this course is to teach the basic principles and technics for laboratory study of certain rickettsiae and viruses which are of interest to public health workers. The course consists of lectures, seminars, supervised individual work, and laboratory exercises. The latter include methods for identification of representative species of rickettsiae and viruses of public health importance by the use of tissue culture, animal inoculation, and serologic technics.

The arthropods which are vectors or reservoirs of the major viral and rickettsial diseases are briefly considered at appropriate points in the exercises.

The course is planned as a basic preparation for those who will be involved in original research on rickettsiae or viruses either in the laboratory or the field.

Limited to ten students who have completed Microbiology 11c or who have had equivalent previous preparation.

Microbiology 15a,b,c,d. Seminars in Microbiology

Seminars. *Wednesdays, 11-1, all four periods.*

Credit 1 unit in each period.

Seminars on topics of special interest in microbiology. These vary from presentations by students of subjects assigned for analysis and review to

SCHOOL OF PUBLIC HEALTH

reports by staff members and advanced students of research work in progress in the department.

This course is required for students majoring in microbiology.

Microbiology 17a,b,c,d. Introduction to Laboratory Research

Laboratory exercises. Time and credit to be arranged with the Department Staff.

Candidates for the Master of Public Health or Master of Science in Hygiene degrees, or full-time special students, may register for advanced laboratory work under the supervision of a member of the Department.

Microbiology 20. Research

Doctoral candidates or full-time special students who have completed the advanced courses in microbiology in the Department may undertake original investigation by arrangement with the Head of the Department.

DEPARTMENT OF NUTRITION

FREDRICK J. STARE, S.M., PH.D., M.D., A.M. (hon.), *Professor of Nutrition and Head of the Department*

DAVID M. HEGSTED, S.M., PH.D., *Professor of Nutrition*

ROBERT P. GEYER, S.M., PH.D., *Associate Professor of Nutrition*

JEAN MAYER, B.A., PH.D., D.S.C., *Associate Professor of Nutrition and Lecturer on the History of Public Health*

MARTHA F. TRULSON, S.B., M.P.H., S.D. IN HYG., *Associate Professor of Nutrition*

STEPHEN B. ANDRUS, S.B., M.D., *Assistant Professor of Pathology*

STANLEY N. GERSHOFF, A.B., S.M., PH.D., *Assistant Professor of Nutrition*

OSCAR W. PORTMAN, S.B., M.D., *Assistant Professor of Nutrition*

JOSEPH J. VITALE, S.M., S.D. IN HYG., *Assistant Professor of Nutrition*

BERNARD LOWN, S.B., M.D., *Assistant Professor of Medicine*

MARIA BANASIEWICZ-RODRIGUEZ, M.D., M.P.H., *Associate in Nutrition*

ROBERT B. MCGANDY, M.D., M.P.H., *Associate in Nutrition*

MADGE L. MYERS, A.B., S.M., *Instructor in Nutrition*

PATRICIA A. STEFANIK, S.M., *Instructor in Nutrition*

EDWIN L. PRIEN, A.B., A.M., M.D., *Clinical Research Associate in Nutrition*

F. RUSSELL OLSEN, A.B., *Research Associate in Nutrition*

LEONARDO SINISTERRA, M.D., S.M. IN HYG., *Research Associate in Nutrition*
(Absent 1962-63)

ROBERT E. CLANCY, M.D., *Research Associate in Medicine*

HARVARD UNIVERSITY

OSCAR M. JANKELSON, M.D., *Research Associate in Medicine*

JOLANE P. SOLOMON, A.B., PH.D., *Research Associate in Nutrition*

MOTOOMI NAKAMURA, M.D., DR.MED.SC., *Research Associate in Nutrition* (Absent 1962-63)

ETHEL J. BOWIE, S.B., *Assistant in Nutrition*

DOROTHY BRUNO, S.B., *Assistant in Nutrition*

ATSUSHI IWAMOTO, M.D., PH.D., *Research Fellow in Nutrition*

PAUL N. ROZIN, PH.D., *Research Fellow in Physiological Psychology in the Department of Nutrition*

JAMES H. SHAW, S.M., PH.D., *Associate Professor of Biological Chemistry in the School of Dental Medicine*

IRA GORE, A.B., M.D., *Lecturer on Pathology*

NORMAN ZAMCHECK, A.B., M.D., *Clinical Associate in Medicine*

EARL E. HELLERSTEIN, M.D., *Associate in Pathology*

DANIEL S. BERNSTEIN, M.D., *Instructor in Medicine*

HAROLD J. WHITE, M.D., *Instructor in Pathology*

HARRY B. STULTZ, JR., A.B., M.D., *Assistant in Pediatrics*

The Department of Nutrition is concerned with basic and applied investigations in the science of nutrition in the areas of biochemistry, physiology, and pathology. Many of these are oriented toward problems of contemporary public health importance, such as cardiovascular disease, obesity, and cancer. The Department also has programs dealing with general nutritional and health problems in various countries in South America, Africa, and Asia.

In addition to the courses available in the School of Public Health, students may take graduate courses in the other Schools of Harvard University and at the Massachusetts Institute of Technology. Thus, a program leading to the Doctor of Science degree might include courses in nutrition, biochemistry, biostatistics and epidemiology, physiology, and bacteriology, as well as advanced courses in these and related fields, such as organic chemistry and biology. Appropriate programs are available for individuals whose interests lie in community nutrition rather than in laboratory nutrition and biochemistry.

Nutrition 1a. Public Health Nutrition

Lectures. *Mondays, 10-11, Tuesdays and Thursdays, 2-4, first period.* Dr. STARE and Staff of the Department.

Credit 2.5 units.

One of the six semi-elective courses from which Master of Public Health

SCHOOL OF PUBLIC HEALTH

candidates are required to elect a minimum of 12.5 credit units. Candidates for the degree of Master of Science in Hygiene may also elect this course.

This course deals with the science of nutrition and its application to problems of human nutrition. Approximately one half of the lectures are devoted to basic and clinical nutrition. Dietary requirements are considered in relation to growth, development, pregnancy, lactation and disease states. Methods for establishing and meeting nutrition requirements, especially in countries with unfavorable economic conditions, are discussed. The etiology, treatment and prevention of diseases related to nutritional factors are considered. Content also includes nutrition surveys and their evaluation, the place of the nutritionist in the public health program, and the nutritional problems of relief, rehabilitation, famine and other emergencies. The relation of production, distribution and preparation for the best use of foods is discussed, as are the problems of food enrichment, fortification and faddism.

Seminar sessions are arranged for small groups. Active student participation is expected.

Nutrition 2c,d. Advanced Topics in Nutrition

Lectures, discussions and required reading. *Wednesdays, 11-1, Fridays, 9-11, third period; Wednesdays, 11-1, fourth period.* Dr. HEGSTED, Dr. MAYER and Dr. GERSHOFF.

Credit 3 units.

The chemistry, function and metabolism of carbohydrates, fats, proteins, vitamins and essential minerals are considered in detail. Mechanisms of regulation and behavioral aspects of food and fluid intake, calorimetry, genetic factors in nutrition, comparative requirements of various species are examined.

This course is intended primarily for students majoring in nutrition but can be taken by other adequately prepared students by consent of the instructors.

Nutrition 3c,d. Laboratory Technics

Lectures and demonstrations. *Wednesdays, 3-5, third and fourth periods.* Dr. GEYER, Dr. PORTMAN and Dr. VITALE.

Credit 2 units. Additional credits can be arranged for those desiring extra laboratory instruction.

This course is a survey of methods pertinent to laboratory research. The material covered includes biophysical and chemical technics. Students participate in the preparation and presentation of such general topics as chromatography, spectroscopy, microbiological assay, manometric measurements, and purified diet technics. They are then instructed in the actual laboratory procedure pertaining to these technics.

Prerequisites: A basic course in biochemistry and consent of instructor.

HARVARD UNIVERSITY

Nutrition 4d. Clinical and Pathologic Aspects of Nutritional Disease

Lectures, demonstrations and seminars. *Tuesdays, 9-11, fourth period.* Dr. LOWN, Dr. ANDRUS and Dr. MCGANDY.

Credit 1 unit.

This course is concerned with the intermediate metabolism of various selected nutrients, with especial emphasis upon clinical aspects. The discussions will orient to the most recent advances in biochemistry and physiology.

Nutrition 5d. Nutritional Surveys

Lectures, discussions and laboratory exercises. *Thursdays, 9-11, fourth period.* Dr. TRULSON, Dr. GERSHOFF and Dr. MCGANDY.

Credit 1 unit.

Methods of obtaining dietary information, principle of nutritional surveys; assessment of nutritional status in public health programs and clinical research are examined and discussed. Laboratory work will consist of practical exercises in evaluating diets and surveys.

Nutrition 17a,b,c,d. Individual Study

Time and credit to be arranged.

Individual work, under direction, may be arranged for students at the masters' level. This may include laboratory studies or projects in applied nutrition.

Nutrition 20. Research

Time and credit to be arranged.

Facilities are available for students at the doctoral level to do advanced work in nutrition along the lines of fundamental research or applied nutrition in public health and medicine.

Admission limited and subject to approval of the instructor.

SCHOOL OF PUBLIC HEALTH

DEPARTMENT OF PUBLIC HEALTH PRACTICE

HUGH R. LEAVELL, S.B., M.D., DR.P.H., *Professor of Public Health Practice and Head of the Department*

ROBERT H. HAMLIN, A.B., M.D., M.P.H., LL.B., *Roger Irving Lee Professor of Public Health and Director of the Interfaculty Program on Health and Medical Care*

ALFRED L. FRECHETTE, M.D., M.P.H., *Clinical Professor of Public Health Practice and Commissioner of Public Health, Commonwealth of Massachusetts*

LEONID S. SNEGIREFF, M.D., DR.P.H., *Associate Professor of Chronic Disease Control*

GERALD CAPLAN, B.SC., M.B.,CH.B., D.P.M., M.D., *Associate Professor of Mental Health*

BENJAMIN D. PAUL, A.B., PH.D., *Associate Professor of Social Anthropology*
(Absent 1962-63)

SOL LEVINE, PH.D., *Associate Professor of Social Psychology*

ELIZABETH P. RICE, A.B., S.M., *Associate Professor of Public Health Social Work*

JAMES S. MCKENZIE POLLOCK, M.B.,CH.B., D.P.H., S.M. IN HYG., *Associate Clinical Professor of International Health*

WALLACE H. BEST, PH.D., *Lecturer on Public Administration*

EDWARD A. MASON, A.B., M.D., *Assistant Professor of Mental Health*

MARJORIE A. C. YOUNG, ED.M., DR.P.H., *Assistant Professor of Health Education*

LOUISA P. HOWE, PH.D., *Assistant Professor of Mental Health*

SYDNEY H. CROOG, PH.D., *Assistant Professor of Sociology*

CHARLOTTE E. OWENS, S.B., M.P.H., *Associate in Mental Health*

THOMAS F. A. PLAUT, PH.D., M.P.H., *Clinical Associate in Mental Health*

HARRY T. PHILLIPS, M.B.,CH.B., D.P.H., M.D., *Lecturer on Public Health Practice*

THOMAS R. DAWBER, A.B., M.D., M.P.H., *Lecturer on Chronic Disease and Gerontology*

LEON J. TAUBENHAUS, A.B., M.D., M.P.H., *Lecturer on Public Health Practice*

SIDNEY S. LEE, S.B., M.D., DR.P.H., *Lecturer on Public Health Practice and General Director, Beth Israel Hospital*

RHONA V. RAPOPORT, B.SC., PH.D., *Lecturer on Mental Health*

FRANK R. FRECKLETON, M.D., M.P.H., *Lecturer on Public Health Practice*

LENIN A. BALER, PH.D., S.M. IN HYG., *Lecturer on Mental Health*

BARBARA T. GANEM, A.B., M.D., M.P.H., *Lecturer on Public Health Practice*

BELLENDEN R. HUTCHESON, S.B., M.D., *Lecturer on Mental Health*

EDWARD B. KOVAR, A.B., A.M., *Lecturer on Public Health Practice*

HARVARD UNIVERSITY

- EDWARD WELLIN, PH.D., S.M. IN HYG., *Visiting Lecturer on Social Anthropology*
GEORGE JAMES, M.D., M.P.H., *Visiting Lecturer on Public Health Practice*
FRANKLYN B. AMOS, M.D., M.P.H., *Instructor in Public Health Practice*
OLIVE M. LOMBARD, B.SC., S.M. IN HYG., *Instructor in Public Health Practice*
DONALD C. KLEIN, A.B., PH.D., *Instructor in Mental Health*
BESSIE S. DANA, A.B. M.S.S., *Instructor in Public Health Social Work*
AUGUSTA F. LAW, A.B., M.D., M.P.H., *Instructor in Public Health Practice*
ANN M. THOMSON, S.B., M.P.H., *Instructor in Public Health Nursing*
MARY D. BAIN, A.B., M.D., *Instructor in Mental Health*
SAUL COOPER, A.M., *Instructor in Mental Health*
JOHN G. McCORMICK, S.M., *Instructor in Health Education*
ELIZABETH KINGSBURY CASO, S.M., S.M. IN HYG., *Instructor in Nutrition*
(Chronic Disease)
GEORGE T. NILSON, S.B., ED.M., M.P.H., *Instructor in Health Education*
FRANCES H. PITTS, S.M., M.P.H., *Instructor in Health Education*
DONALD OTTENSTEIN, S.B., M.D., *Instructor in Mental Health*
CATHERINE M. CASEY, A.B., M.S.W., S.M. IN HYG., *Instructor in Public Health*
Social Work
ROY PENCHANSKY, S.B., M.I.L.R., D.B.A., *Instructor in Medical Care Administration*
JAMES E. TEELE, PH.D., *Research Associate in Sociology*
NORMAN A. SCOTCH, PH.D., S.M. IN HYG., *Research Associate in Anthropology*
WILLIAM A. GAMSON, PH.D., *Research Associate in Social Psychology*
LILLY C. MOBERG, *Assistant in Public Health Nursing*
RAYMOND F. WAGNER, S.M., *Assistant in Public Health Practice*
EDNA L. SKELLEY, S.B., A.M., *Assistant in Public Health Nursing*
CHARLES M. BRYANT, A.B., M.D., M.P.H., *Teaching Fellow in Public Health*
Practice
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- ERICH LINDEMANN, PH.D., M.D., *Professor of Psychiatry*
SHIELDS WARREN, A.B., M.D., S.D. (hon.), LL.D., *Professor of Pathology at the*
New England Deaconess Hospital
SIDNEY FARBER, S.B., M.D., *Professor of Pathology at The Children's Hospital*
PAUL K. LOSCH, D.D.S., *Associate Professor of Pediatric Dentistry at the Chil-*
dren's Hospital
JAMES M. DUNNING, A.B., D.D.S., M.P.H., *Assistant Clinical Professor of Public*

SCHOOL OF PUBLIC HEALTH

Health Dentistry, Harvard School of Dental Medicine and Director, Dental Health Service, University Health Services

WILLIAM J. CURRAN, LL.M., S.M. IN HYG., *Lecturer on Legal Medicine, Harvard Law School, (Utley Professor of Legal Medicine, Director, Law-Medicine Research Institute, Boston University)*

JOHN C. NEMIAH, *Associate in Psychiatry*

MARY LEE INGBAR, S.B., PH.D., M.P.H., *Research Associate in the Graduate School of Public Administration*

The Department has specific objectives in the three broad areas of education, research and community service.

In *education* the Department seeks:

(a) To develop leaders in planning and operating total community health services who will be prepared to study objectively and to deal effectively with the changing administrative problems of the future. Such leaders should be competent to organize, evaluate, and administer programs for service, education, research or a combination of these activities.

(b) To educate leaders in the content and administration of *special* fields of public health for which the Department has particular responsibility. At present, the following fields are included: chronic disease control and gerontology, community mental health, health education, medical care administration, public health dentistry, public health law, public health nursing, public health social work, rehabilitation and social science in public health.

(c) To provide opportunities for specialists majoring in other departments of the School to develop an appreciation of the relationships between their own special field on the one hand, and public health as a whole and the communities in which they will work, on the other hand.

(d) To provide a background in the concepts and research methods of the social sciences for those students whose future activities will require knowledge of these fields.

In *research*, the Department seeks to stimulate and carry on research in the special fields of public health for which the Department is responsible. Included are the subject areas in which health and the social sciences have important interfaces, as well as comparative studies of administrative methods and problems in different parts of the world, with the purpose of discovering concepts of broad applicability.

In *service*, it is the Department's objective to provide consultation and community service to the extent that is consistent with the development and maintenance of a strong educational and research program designed to coordinate total community health activities.

HARVARD UNIVERSITY

Public Health Practice 1a,b. Basic Concepts of Public Health Practice

Seminars and lectures. *Mondays, 9-10, and Fridays, 9-11, first period; Mondays and Fridays, 11-1, second period.* Dr. LEAVELL and associates.

Credit 3 units.

Required of Master of Public Health candidates. Candidates for the degree of Master of Science in Hygiene and Master of Industrial Health may also elect this course.

The course is designed to give those who will work in organized health agencies an introduction to basic concepts in public health practice. Since this work may be in either voluntary or official agencies and at any political level (local, state, or provincial, national and international) discussions are keyed to those concepts which have broad validity in the rapidly changing context of comprehensive community health wherever it is practiced.

Small seminar groups made up of students of differing experience provide forums to discuss case studies illustrating administrative problems. In a term paper, each student is expected to analyze a specific community health problem and to work out a plan for solving the problem.

Interdepartmental Course 1a, The Human Community, is recommended strongly as a course which provides essential background for understanding organization of the community and the interpersonal relations which are essential elements of public health practice everywhere.

Public Health Practice 2c,d. Organization and Administration of Medical Care

Seminars. *Fridays, 2-4, third and fourth periods.* Dr. HAMLIN.

Credit 2 units.

An introduction to basic concepts in the organization and administration of personal health services. Among the subjects analyzed are: (a) the cost, utilization, and social implications of medical care; (b) the need and demand of the population for personal health services; (c) the number and adequacy of health personnel and facilities; (d) patterns of organizing health personnel and facilities, including group practice arrangements and regionalized hospital systems; (e) methods of meeting the costs of medical care through organized payment; (f) programs providing medical care for special groups of the population, specific diseases, and special hazards; (g) the roles of private and public agencies in financing and operating programs of medical care; and (h) comparison of medical care programs in the United States and other countries.

Major emphasis will be placed upon developing the ability of students to evaluate and apply various administrative policies for medical care programs. Seminars will involve a discussion of the content and application of assigned reading material.

Public Health Practice 3b. The Development of Personality in Health and Disease

Lectures and discussions. *Tuesdays, 2-4, second period.* Dr. MASON, Dr. CAPLAN and associates.

Credit 1 unit.

This course discusses concepts of personality structure and functioning in relation to work in the public health field. Factors which influence the development of healthy and unhealthy personality are discussed. Special attention is given to genetic, prenatal, and paranatal organic factors; to the influence of parent-child relationships; to the long term and short term effects of the psycho-social milieu of the family; and to the socio-cultural influences at work in the neighborhood and in the community. The unfolding of personality over the life span is studied, and the effects of life crises which are the reactions to hazardous environmental circumstances and to physiological changes such as pregnancy and bodily illness are analyzed. These considerations are then used as a basis for conceptualizing the etiological forces in the processes of mental health and mental ill health.

This course is introductory to Public Health Practice 9c,d.

Public Health Practice 4b,c. Control of Chronic Disease and Its Relation to Gerontology and Rehabilitation

Lectures and seminars. *Thursdays, 2-4, second period; Fridays, 9-11, third period.* Dr. SNEGIREFF, Miss RICE and associates.

Credit 2 units.

This course is designed to present and discuss some of the major problems in the control of chronic disease and of cancer in all age groups. Rehabilitation is presented as an integral part of chronic disease control.

Authorities in the various fields and program directors discuss specific phases of selected problems. The role of official and voluntary health agencies and their implementation at the community level is presented. Aging as a major medical, socio-economic, and psychological problem is reviewed. Emphasis is given to the newer methods of detection of disease, home care and nursing home care. Current research studies are considered.

Public Health Practice 5c,d. Health Education

Seminars. *Thursdays, 2-4, third and fourth periods.* Dr. YOUNG.

Credit 2 units.

This is a problems discussion course focusing principally on how people learn; barriers to health education; methods used in health education; the practical, psychological, cultural and attitudinal factors to be considered in health education; and evaluation of health education efforts. Major emphasis

HARVARD UNIVERSITY

is placed on community health programs and problems, with the school system being considered an integral and important part of the community.

Public Health Practice 6c,d. Group Dynamics

Seminars. *Thursdays, 4-6, third and fourth periods.* Dr. KLEIN.

Credit 2 units.

The seminar can accommodate up to fifteen students. Priority is given to persons (e.g. administrators, those responsible for health education activities) for whom skill in working with staff and community groups is especially important.

Purposes of the seminars are: (1) to increase participants' sensitivity to phenomena occurring in face-to-face groups; (2) to provide the theoretical and conceptual framework for understanding the reasons for these phenomena; (3) to help students increase their own skills as group participants; (4) to stimulate interest in systematic observation and study of small group behavior.

The first hour of each session is devoted to a laboratory approach in which the group seeks to understand and learn from its own experiences. During the second hour relevant theoretical material and research findings are presented, sometimes supplemented by special practice or diagnostic exercises using role playing and other techniques. A selected list of readings is provided and observation of other groups is encouraged.

Public Health Practice 7c. Principles of Supervision and Consultation

Seminars. *Wednesdays, 4-6, third period.* Miss RICE and Mrs. DANA.

Credit 1 unit.

The first half of the course is devoted to the discussion of supervision in terms of objectives, methods, and principles. The case method is employed to illustrate the application of supervisory principles to actual learning situations in the various fields of public health.

The second half of the course is concerned with the development of the basic principles of consultation through 1) an examination of the expectations of the consultee and the practices of the consultant from the point of view of the various health disciplines and 2) a consideration of the consultative methods employed in problem solving, staff development, and program planning in the health and welfare fields.

The differences between supervision and consultation are evaluated.

Public Health Practice 8d. Legal Problems of Organized Health Programs

Seminars. *Fridays, 9-11, fourth period.* Mr. CURRAN.

Credit 1 unit.

The seminar is primarily designed for those who are or who may become

SCHOOL OF PUBLIC HEALTH

administrators and policy-makers, including health officers, nurse supervisors, medical care personnel, sanitary engineers, or other similar personnel, in public or private agencies. Seminars will include discussions on: (a) utilization of the law in implementing health programs; (b) the liability of health personnel and health organizations in the operation of their programs; (c) the development and comparison of legal and medical standards of practice, particularly how these standards on a legal basis may be used to increase and maintain the quality of health programs; (d) the preparation of health department regulations; (e) the preparation and presentation of medical evidence for hearings, court procedures, etc.; (f) the legal problems of disease control; and (g) various legal and administrative forms of health practice.

Public Health Practice 9c,d. The Control of Mental Disorders

Seminars. *Tuesdays, 2-4, third and fourth periods.* Dr. CAPLAN and associates.

Credit 2 units.

This seminar is designed to give public health workers some insight into the problems of organizing community programs for the control of the common mental disorders. The work of different community agencies designed to treat and prevent disorders such as psychoses, psychoneuroses, psychosomatic disorders, mental retardation, alcoholism, and drug addiction is reviewed. Such agencies include mental hospitals, psychiatric departments of general hospitals, child guidance clinics, and community mental health centers. Organizational policies of state and local official and voluntary mental health agencies are discussed, and some attention is given to problems of research and training in prevention, treatment, and rehabilitation methods, as well as to the implications of these topics for the collaboration of mental health workers and public health workers.

Public Health Practice 10c,d. Advanced Public Health Practice

Seminars and field study. *Mondays and Wednesdays, 2-4, third and fourth periods.* Dr. LEAVELL, Dr. MCKENZIE POLLOCK, Dr. BEST, Dr. YOUNG, Miss RICE and associates.

Credit 4 units.

This course has two parts:

- a. Seminar discussions of problems and practice with emphasis on the administrator and the public health team with which he works in agencies of various types and on different kinds of public health programs. These discussions are planned to explore intensively concepts and broad problems of policy introduced in Public Health Practice 1a,b and others important to the advanced student of administration.
- b. Field studies of administrative problems which are currently in need

HARVARD UNIVERSITY

of solution in localities convenient to the school. Small student groups with a faculty advisor actively study the problem to which they are assigned. Near the end of the course, the several problems which have been studied are presented for consideration by the whole class and faculty concerned. Ordinarily, one of the problems is taken from a foreign country to provide opportunity for the examination of comparative administration.

All students majoring in the Department of Public Health Practice are expected to take this course unless they have had equivalent experience previously.

Prerequisites: Public Health Practice 1a,b and Interdepartmental Course 1a.

Public Health Practice 11c,d. Health and Illness in Cross-Cultural Perspective

Seminars. *Mondays, 4-6, third and fourth periods.* Dr. LEVINE and associates.

Credit 2 units.

This course, also listed as Social Relations 283, is designed for public health students who seek greater familiarity with social and cultural aspects of medicine in this and other countries, and for social science students interested in health and health services as a research area. Much of the course consists of presentations by experts conducting specific studies of a sociomedical nature, followed by informal class discussion. Admission is limited and requires consent of the instructor.

Public Health Practice 13c,d. Dental Public Health Practice

Conferences, seminars and field study. Time and credit to be arranged. Dr. DUNNING and associates.

This course is designed particularly for dentists. Emphasis is laid on the application of such sciences as epidemiology and biostatistics to dental problems and upon public health administration in the dental field.

Opportunities for clinical experience are available at the Harvard School of Dental Medicine under certain circumstances.

Public Health Practice 15a,b,c,d. Special Seminars

Seminars. *Wednesdays, 11-1, in all four periods;* additional time to be arranged. Staff of the Department.

Credit 4-8 units.

Students are grouped according to their major interest field in the Department, with a faculty leader. Each student will be expected to work individually on a major project with the advice of a faculty member, to report to the seminar group for discussion of his plans for studying and later upon his results.

SCHOOL OF PUBLIC HEALTH

In addition, there will be discussions of administrative theory and phases of practice which are of special concern to the particular group that are not dealt with intensively in other courses.

These special seminars are arranged to supplement discussions in Public Health Practice 1a,b, Public Health Practice 10c,d and other courses in the Department.

Each student majoring in the Department is expected to take this course; students majoring in other departments may be admitted by special arrangement.

Students specializing in Community Mental Health attend a special seminar which meets for four to six hours weekly, and which focuses upon the integration of general public health studies within a conceptual framework of comprehensive community psychiatry. Special attention is devoted to the theory and practice of preventive psychiatry, with particular reference to techniques of mental health consultation and community organization.

Public Health Practice 17a,b,c,d. Special Projects

Time and credit to be arranged.

Students at the master's level may make arrangements to do individual work on a special project, under the guidance of a member of the Staff of the Department. These projects may include work in various areas of public health practice, such as medical care, mental health, cancer control, etc.

Public Health Practice 20. Research

Doctoral candidates are offered the opportunity to undertake individual study and research as the basis for a doctoral thesis.

Public Health Practice 30. Assignments to Field Agencies

January 21–February 2, 1963; other assignments to be arranged.

Credit 2 units.

Students are assigned to work in the field on special projects, on surveys or other types of field projects in groups, or for observation of and limited participation in the work of health agencies.

Field assignments are made on an individual basis to meet special needs of each student in so far as possible. Work in the field is coordinated with courses in the Department.

A period of field study during the academic year is required of students majoring in public health practice. Students whose previous experience in public health practice is limited are expected to spend two months before the beginning or after the end of the academic year on a field assignment to be worked out with each student.

HARVARD UNIVERSITY

Public Health Practice 41a,b,c,d. Economics and Administration of Medical Care

Seminars. *Tuesdays, 2-4, in all four periods.* Dr. HAMLIN, Professor DUNLOP, Professor LIVERNASH (absent 1962-63) and Dr. PETERSON.

Credit 4 units.

Advanced instruction for graduate students from the Schools of Public Health, Medicine, Business Administration, and Public Administration, including Department of Economics. The seminars will be held at Littauer Center for Public Administration with faculty from the participating schools and outside consultants.

The seminar deals with principles, patterns and problems of adapting resources, organization, and payment for health personnel and facilities to the needs and demands for personal health services. It explores major issues in the administration and economics of medical care, including medical care requirements, changing needs for health facilities and personnel, patterns of organization of medical care programs, standards of medical care and adequacy of services, governmental and private policies on providing and financing personal health services, factors affecting costs and pricing of various components of medical care, and economic and administrative developments in personal health service programs in other countries.

Emphasis is given to the analysis and evaluation of past and current research projects in the administration and economics of personal health services. The applicability and contributions of research methods of various natural and social sciences are discussed.

Permission of the instructor in the School in which the student is registered is necessary.

SCHOOL OF PUBLIC HEALTH

DEPARTMENT OF TROPICAL PUBLIC HEALTH

THOMAS H. WELLER, A.B., S.M., M.D., LL.D., *Richard Pearson Strong Professor of Tropical Public Health and Head of the Department*

PAUL F. RUSSELL, A.B., M.D., M.P.H., S.D. (hon.), *Visiting Professor of Tropical Public Health*

FRANKLIN A. NEVA, S.B., M.D., *Associate Professor of Tropical Public Health*

ELI CHERNIN, S.B., A.M., S.D., *Associate Professor of Tropical Public Health*

THOMAS E. FROTHINGHAM, M.D., *Assistant Professor of Tropical Public Health*

CHIA-TUNG PAN, B.SC., M.D., M.P.H., *Associate in Tropical Public Health*

EDWARD H. MICHELSON, S.M., PH.D., *Associate in Tropical Public Health*

FRED L. SOPER, A.B., S.M., M.D., DR.P.H., S.D. (hon.), *Visiting Lecturer on Tropical Public Health*

GEORGE M. SAUNDERS, A.B., M.D., *Visiting Lecturer on Tropical Public Health*

SAMUEL W. SIMMONS, S.B., PH.D., *Visiting Lecturer on Tropical Public Health*

G. ROBERT COATNEY, PH.D., S.D. (hon.), *Visiting Lecturer on Tropical Public Health*

HARRY MOST, S.B., M.D., D.T.M.&H., D.M.S., *Visiting Lecturer on Tropical Public Health*

DONALD B. McMULLEN, S.D., *Visiting Lecturer on Tropical Public Health*

RICHARD H. DAGGY, S.M., PH.D., DR.P.H., *Visiting Lecturer on Tropical Public Health*

ANDREW SPIELMAN, S.B., S.D., *Instructor in Tropical Public Health*

GUSTAVE J. DAMMIN, A.B., M.D., A.M. (hon.), *Elsie T. Friedman Professor of Pathology, Harvard Medical School and Peter Bent Brigham Hospital*

FRANZ C. VON LICHTENBERG, M.D., DR. (hon.), *Assistant Professor of Pathology, Harvard Medical School and Senior Associate in Pathology, Peter Bent Brigham Hospital*

The health problems of the tropical regions are, for the most part, those of the poorly sanitated areas of the world at large. In such areas the communicable and nutritional diseases are of primary import. The teaching and research interests of the Department of Tropical Public Health deal with the former category—the communicable diseases. Emphasis is given to disease entities that occur in the more developed areas of the world, and to a much smaller group of diseases that are tropical in an obligatory sense for climatic or other reasons. In the presentation of factual material, equal emphasis is given to ecological and epidemiological factors, to new knowledge concerning pathogenesis and diagnosis, and to prevention and control.

HARVARD UNIVERSITY

The basic course, Microbiology-Tropical Public Health 1a,b,c is designed to provide the Master of Public Health candidate with an integrated presentation of information on communicable diseases of major public health importance. Tropical Public Health 2a,b is designed for the Master of Public Health candidate concentrating in the field of Tropical Public Health. Attention is directed to Tropical Public Health 3d, open to all students, which deals with environmental and cultural factors influencing the development of health programs in tropical areas. With the exception of Tropical Public Health 3d, admission to the basic courses is contingent upon an adequate background in the pre-clinical medical sciences, especially pathology.

The investigative program in the Department is broad and currently deals with pathogens ranging from viruses to helminths. Thus, studies on the *in vitro* cultivation and the physiology and immunology of a wide variety of agents are in progress. Biological investigations on the molluscan vectors of the schistosomes comprise another area of major interest. Facilities are available for the training of a limited number of students at the Doctor of Public Health or Doctor of Science in Hygiene level, who may wish to spend a minimum of two years with emphasis on a program of original research. Due to time limitations, the Doctor of Science in Hygiene applicant should, in so far as possible, obtain the necessary medical science background prior to enrollment.

A program supported by the National Institutes of Health is available to assist qualified applicants who desire training in medical parasitology, (see page 103) and a similar program is available to provide training in tropical medicine and tropical public health.

Microbiology and Tropical Public Health 1a,b,c. Ecology and Epidemiology of Infectious Diseases

Lectures, seminars, conferences and laboratory exercises. *Tuesdays, Wednesdays and Thursdays, 9-10, Fridays, 2-5, first period; Tuesdays, Wednesdays and Saturdays, 9-10, Fridays, 2-5, second period; Tuesdays and Thursdays, 9-11, Wednesdays, 10-11, third period.* Dr. SNYDER, Dr. WELLER and the Staff of the two Departments.

Credit 6 units.

One of the six semi-elective courses from which Master of Public Health candidates are required to elect a minimum of 12.5 credit units.

This course is under the general direction of Drs. Snyder and Weller, with the collaboration of the staff of the Departments of Microbiology, Tropical Public Health and Epidemiology. The purpose of the course is to provide students in the Master of Public Health program with the basic knowledge of the communicable and infectious diseases, including the relevant ecologic factors which pertain directly to their prevention and control.

Microbiology and Tropical Public Health 1a,b,c is designed for students who have had most of the courses given in the first two years of medical school or their equivalent. The exercises include discussions of the present status of infectious diseases in tropical and temperate climates and the technics available for study of microorganisms and parasites, with special reference to recent methods which have opened a new era in microbiology. The course emphasizes the principal diseases of public health importance. The subjects are presented by etiologic agent, including protozoa, helminths, viruses, rickettsiae, spirochetes and bacteria.

Approximately two-thirds of the time will be devoted to lectures and one-third to conferences, seminar discussions, and laboratory exercises. In the laboratory the student is expected to acquire an understanding of the potentialities as well as the limitations of pertinent public health laboratory procedures.

Tropical Public Health 2a,b. Ecology and Prevention of Tropical Diseases

Seminars, laboratory exercises, assigned reading. *Wednesdays, 11-1, first and second periods.* Dr. NEVA, Dr. CHERNIN and Dr. FROTHINGHAM.

Credit 2 units.

This course is designed for students concentrating in the Department of Tropical Public Health. It is planned to supplement Microbiology-Tropical Public Health 1a,b,c, and deals with important disease entities omitted from the basic course because of time limitations. Emphasis is placed on the ecological and epidemiological approach to the multiplicity of interrelated factors governing the welfare of man in tropical and poorly sanitated areas.

Tropical Public Health 3d. Problems in Tropical Health

Lectures and conferences. *Fridays, 11-1, fourth period.* Dr. WELLER and guest lecturers.

Credit 1 unit.

This course is designed to provide general background information on environmental, social, economic, and political factors influencing the development of health programs in the tropics. At each session a distinguished guest lecturer covers an assigned topic; the subject material includes such diversified topics as the status of professional education in tropical areas, the importance of the zoonoses, and political policies in the field of international cooperation. Each formal presentation is followed by a period devoted to informal student discussion. Registration is open to all students.

Tropical Public Health 5c,d. Seminar

Seminars and discussions. One hour session twice a month throughout the third and fourth periods. Time to be arranged. Staff of the Department.

Credit .5 unit.

HARVARD UNIVERSITY

Students particularly interested in tropical health will meet with staff members for the presentation and discussion of current literature and original investigations. Admission for credit is subject to the approval of the Head of the Department, and the total number of students is limited.

Tropical Public Health 6c. Parasitic Infections of Man

Lectures, laboratory exercises and demonstrations. *Tuesdays, 8:30-12:30, and Fridays, 2-5, February and March.* Dr. WELLER, Dr. NEVA, Dr. CHERNIN, Dr. FROTHINGHAM and associates.

Credit 1.5 units.

This course is designed primarily for students in the School of Medicine. It is open, however, to a limited number of students registered in the School of Public Health. The important helminth and protozoan parasites of man are considered with reference to their geographic distribution, identification, mode of transmission, pathogenesis, immune reactions, and methods for prevention and control. Clinical aspects and chemotherapy of parasitic diseases are discussed. Emphasis is given to methods of laboratory diagnosis. Arthropods of parasitologic importance are briefly surveyed.

Tropical Public Health 7c. Laboratory Technics

Conferences and laboratory. *Tuesdays and Thursdays, 2-5, third period.* Dr. PAN.

Credit 2 units.

Students are offered the opportunity to learn the technics of handling parasitic agents in culture or in laboratory animals, and to gain experience in the use of procedures employed in diagnostic and research laboratory work.

Enrollment limited and subject to the approval of the instructor.

Tropical Public Health 8d. Introduction to Molluscs of Public Health Importance

Conferences, laboratory and field exercises. One afternoon a week, fourth period. Dr. MICHELSON.

Credit 1 unit.

This is an introductory course designed to acquaint the student with the molluscs which may act either as active or passive agents for the dispersal of pathogens, toxins, or parasites which cause disease in man. Students will be offered the opportunity to study field and laboratory technics necessary for an understanding of the taxonomy, morphology, cultivation, ecology and control of these molluscs.

Prerequisite: Consent of instructor.

SCHOOL OF PUBLIC HEALTH

Tropical Public Health 17a,b,c,d. Introduction to Laboratory Research

Laboratory exercises. Time and credit to be arranged.

Individual work for candidates at the Master's degree level may be carried out under supervision of a member of the Department. A variety of parasites of medical importance are maintained and are available for studies on metabolism, host-parasite relationships, and chemotherapy. Arrangements are subject to the approval of the instructor.

Tropical Public Health 20. Research

Doctoral candidates or qualified full-time special students may undertake original investigations in the laboratory or in the field by arrangement with the Head of the Department.

Tropical Public Health 42c. History of Tropical Public Health

Seminar. One hour a week, third period, time to be arranged. Dr. RUSSELL.
Credit .5 unit.

These seminars are designed to supplement Interdepartmental Course 3b which, however, is not a prerequisite. Discussions will focus on the development of understanding and control of a tropical disease such as malaria, plague, cholera, and yellow fever. Emphasized will be the interaction between public health and other social factors in the history of these diseases.

Tropical Public Health 43d. Introduction to Medical Entomology

Conferences, laboratory, and field exercises. *Wednesdays, 2-5, fourth period.* Dr. SPIELMAN.

Credit 1 unit.

This course deals with the insects, ticks and mites of medical importance. Their recognition, biology, and role in the production of disease are considered. Techniques of identification, collection, rearing and handling will be demonstrated and insect anatomy and physiology briefly reviewed.

Prerequisite: Consent of instructor.

Tropical Public Health 44b. Clinical and Pathologic Features of Tropical Diseases

Case presentations, clinico-pathologic conferences, and demonstrations. *Wednesdays, 2-4, second period.* Dr. NEVA, Dr. VON LICHTENBERG and staff members.

Credit 1 unit.

This course, designed for students particularly interested in tropical medicine, supplements material presented in Microbiology-Tropical Public Health

HARVARD UNIVERSITY

1a,b,c. The emphasis is on the clinico-pathologic aspect of tropical diseases. At each session one or more disease entities are introduced by presentation of a clinical case, and pertinent clinical and pathological features of the disease then reviewed. Enrollment subject to approval of the instructor.

Prerequisite: Tropical Public Health 6c or equivalent, or enrollment in Microbiology-Tropical Public Health 1a,b,c.

Section IV
Special Programs

COURSES OF STUDY IN PREPARATION FOR ACADEMIC CAREERS

An analysis of the positions occupied by the alumni of the Harvard School of Public Health has shown that they are engaged in a wide range of activities in public health, engineering and medicine. It is of particular importance to the School, however, that approximately 20 per cent of its graduates have entered careers in education and research. Thus the curriculum must provide students with the basis for effective participation in the academic as well as the administrative aspects of public health. A course of study leading to a doctoral degree is the traditional way to prepare for an academic career. The alternative, for those who have completed their professional education, is to spend enough time as a research fellow to learn the technics of investigation and to acquire thorough knowledge of a particular field. The Harvard School of Public Health encourages both types of activity, and is seeking to improve its curriculum for advanced students and the opportunities for research fellows.

In pursuing these objectives the Faculty has, from time to time, undertaken new plans of instruction when it is clear that the School has both the opportunity and the ability to meet a need in one of the major areas of public health. The experience gained determines whether the particular undertaking can be incorporated into the general academic activity of the School. An example is the special program for teachers of preventive medicine and public health which was begun in 1956 and which has been integrated with the regular academic activities of the School, as described below.

Preventive Medicine and Public Health. In recognition of the need for well trained teachers of preventive medicine and of public health, the School plans to intensify its long term efforts to attract students whose field of endeavor is, or is likely to be, in departments of preventive medicine and public health in this country or abroad. The experience of the past five years has indicated that each candidate for an academic career in preventive medicine and public health should be encouraged to select either a research fellowship or that

HARVARD UNIVERSITY

particular degree program of the School which is best suited to his individual needs and his own professional background. The regular academic programs of the School are sufficiently flexible to meet the varied needs of individual students seeking preparation for academic careers.

Regardless of their degree status, these students will be encouraged to acquire a high level of competence in one of the public health disciplines, this being regarded as most important for success in an academic career. Special seminars and short periods of observation at representative institutions will be included in the schedules offered by the School. When it is advantageous to a particular student, the School will seek to coordinate his course of study with residency training programs, such as those which may be recommended by the American Board of Preventive Medicine or which may be developed in other countries.

PROGRAMS RELATED TO MENTAL HEALTH AND MENTAL DISORDER

Problems of mental health and mental disorder are of concern to several departments of the School, particularly Epidemiology, Maternal and Child Health, and Public Health Practice. By developing opportunities for study and research in several aspects of the broad field of mental health, the School hopes to encourage the enrollment of students or the application of research fellows who are interested in mental health and who are qualified to undertake advanced studies in preparation for careers in teaching, research, and administration. For those who enroll as students, the programs in mental health are arranged within the framework of the various degrees offered by the School (see pages 27-35).

In the Department of Epidemiology, students and research fellows may undertake a program of study and research in the application of epidemiologic methods to mental disorders. The plan of work is arranged on an individual basis in consultation with the head of the Department.

In the Department of Maternal and Child Health, students may

participate in the community studies concerned with the significance of mental disorders in pregnancy and childhood.

In the Department of Public Health Practice, a program in community mental health is available to candidates who may come from the disciplines of psychiatry, psychology, social work, or public health nursing if they are qualified for graduate study in community mental health. After completion of the academic year students are encouraged to spend two months or more in supervised field activities which provide experience in mental health administration. Individual programs are planned for advanced students by the Director of the Community Mental Health Unit in consultation with the Head of the Department of Public Health Practice.

PROGRAMS OF STUDY IN THE DIVISION OF ENVIRONMENTAL HEALTH SCIENCES AND ENGINEERING

The combination of medical, engineering, and related disciplines in the Division of Environmental Health Sciences and Engineering enables the School to offer programs of instruction in special fields such as occupational medicine, aviation health and safety, radiological health, and community air pollution control. The Division includes the Departments of Industrial Hygiene, Sanitary Engineering and Physiology. The University Health Services' Division of Environmental Health and Safety is closely related and provides opportunities for practical experience in environmental health activities within the University.

Occupational Medicine

Physicians may enroll in this program through any one of the Masters degrees offered by the School. Qualified students may be accepted for a second year of work toward a doctoral degree in one of the fields of occupational medicine or environmental health. Other students may elect to remain for a second year of formal courses and tutorial study in occupational medicine and public health.

The usual course content of the program is listed under the Master

HARVARD UNIVERSITY

of Industrial Health degree (page 30). Additional courses and course content may be found under the department listings.

Aviation Health and Safety

Students may undertake an academic program in Aviation Health and Safety as candidates for one of the various degrees offered by the School (see pages 27-35).

Weekly seminars given throughout the year are designed to meet the special interests of those concentrating in the field of aviation medicine, not only for representatives of the military services, but also for those who plan to enter the medical or engineering departments of aircraft manufacturing companies and civil airlines.

Industrial Hygiene and Industrial Hygiene Engineering

Since 1951 the U.S. Atomic Energy Commission has awarded fellowships to graduate students in engineering, chemistry, physics and biology for studies in industrial hygiene and industrial hygiene engineering. Students may be admitted to a two-year program leading to a Master of Science in Hygiene degree. Students having an acceptable year of graduate work elsewhere may be admitted to the program on a one-year basis.

Radiological or Health Physics and Radiation Control Programs

Programs in radiological hygiene and radiation control are offered by the School of Public Health to graduate students only. Properly qualified students including U.S. Atomic Energy Commission Fellows may be admitted to a one- or two-year program depending upon whether they have had an acceptable year of graduate work elsewhere. This program leads to a Master of Science in Hygiene degree. A program of courses in radiological hygiene, atomic and nuclear physics, radiological engineering, industrial hygiene, physiology, toxicology, radiation biology and related subjects is planned on the basis of individual backgrounds and needs.

SCHOOL OF PUBLIC HEALTH

PROGRAM IN PUBLIC HEALTH EDUCATION

This program is offered by the School of Public Health with the cooperation of the Department of Social Relations (Faculty of Arts and Sciences) and the School of Education. It includes required and elective courses in public health as well as courses in the social sciences and in education. The program is flexible and will be modified to suit the needs of the student. Classwork is supplemented by three months of supervised field training following the spring term.

Candidates may study for the degree of Master of Science in Hygiene. Work toward the degree of Doctor of Science in Hygiene is offered to exceptional students.

Health education is an area of public health in which there has been rapid development in recent years. Professional opportunities are numerous and varied and exist at local, state and national levels in both official and voluntary agencies.

Section V

General Information

GENERAL INFORMATION

REGISTRATION

Registration in the School of Public Health for the academic year 1962-63 takes place from Monday, September 17 to Friday, September 21. In order to allow ample time for planning of individual course programs and for discussions with Faculty members, students enrolling for the first time are expected to start the registration procedures on Monday of registration week.

FOREIGN STUDENTS

An orientation course for students coming to the United States for the first time will be held at the School of Public Health from Monday, September 10 to Friday, September 21, 1962. The program is planned to acquaint the students with our customs and teaching methods, with library and other facilities available. It will include lectures and seminars, visits to various University departments and to hospitals or public health activities in Boston.

During this period each student who comes from outside the United States will have a conference with the Faculty Advisor for Foreign Students to discuss his particular needs and interests. This Advisor, as well as the staff of the Dean's Office, is available for consultation with students throughout the year.

All students who are not citizens of the United States will be referred during the orientation period to the Harvard International Students' Office, Holyoke Center, 75 Mt. Auburn Street, Cambridge, where they will show their passports, and fill out a Student Registration form.

FEES AND EXPENSES

The fee for tuition is \$1,400 for the academic year for full-time students. Each candidate for a degree must have one year of resi-

HARVARD UNIVERSITY

dence at the School at full tuition. Doctoral degree candidates enrolled for more than one year may pay tuition at a reduced rate, depending on the amount of time spent at the School, as follows:

First year:	\$1,400
Second year:	
Full-time residents:	\$700
Part-time residents:	prorated, but not less than \$100 per term
Non-residents:	\$100 per term
After the second year:	\$100 per term for resident doctoral candidates

Special Students

Students who are not candidates for a degree but who are admitted for courses in a special field, on a full-time or a part-time basis, will pay tuition at the following rates:

Full-time students:	\$1,400
Part-time students:	\$35 per credit unit, plus \$5 for each course

If a part-time student who has paid tuition at the course rate becomes a degree candidate, the \$5 course fees are not included as part of the tuition required for the degree.

Health Service Fee

Each full-time student will be charged a fee of \$74 per year for health and medical care. Part-time students working at the rate of substantially half-time or less may be excused from the payment of such fee at any time within two weeks after their registration, upon the recommendation of the Dean.

Payment of Fees

Bills for tuition and fees will be issued and payable as follows:

<i>Issued</i>	<i>Payable</i>	
At registration	Within 10 days	$\left\{ \begin{array}{l} \frac{1}{4} \text{ Tuition} \\ \frac{1}{2} \text{ Health Service Fee} \end{array} \right.$

Nov. 30	Dec. 15	$\left\{ \begin{array}{l} \frac{1}{4} \text{ Tuition} \\ \text{Board through October 31} \\ \text{Miscellaneous Charges} \end{array} \right.$
Jan. 30	Feb. 15	$\left\{ \begin{array}{l} \frac{1}{4} \text{ Tuition} \\ \frac{1}{2} \text{ Health Service Fee} \\ \text{Board through December 31} \\ \text{Miscellaneous Charges} \end{array} \right.$
April 30	May 15	$\left\{ \begin{array}{l} \frac{1}{4} \text{ Tuition} \\ \text{Board through March 31} \\ \text{Miscellaneous Charges} \end{array} \right.$
June 5*	June 12	$\left\{ \begin{array}{l} \text{Board to the end of the year} \\ \text{Miscellaneous Charges} \end{array} \right.$
June 30	July 15	$\left\{ \begin{array}{l} \text{Board to the end of the year} \\ \text{Miscellaneous Charges} \end{array} \right.$

Students who are candidates for degrees must have paid all dues to the University at least one day before the day upon which the degrees are to be voted. A student who leaves during the year is charged to the end of the tuition period in which he leaves provided before that time he gives the Dean notice in writing of his withdrawal; otherwise he is charged to the end of the tuition period in which such notice is given.

A student who leaves the University for any reason whatever must pay all charges against him immediately upon receipt of a bill from the Comptroller's Office. Every student will be held responsible for the payment of fees until he has notified the Dean of his intention to withdraw from the School.

All term bills will be sent to the student at his local address unless the Comptroller's Office is requested in writing to send them elsewhere.

Any student whose indebtedness to the University remains unpaid on the date fixed for payment is deprived of the privileges of the University. Reinstatement is obtained only by consent of the Dean of the School in which the student is enrolled after payment of all

* Applies only to candidates for degrees.

HARVARD UNIVERSITY

indebtedness and a reinstatement fee of \$10. In addition as a condition of reinstatement such student is required to file with the Comptroller a bond in the amount of \$1000 as security for the payment of future term bills.

STUDENT HEALTH SERVICE

Under the University Health and Insurance Plan students at the School receive medical care in the Harvard Medical Center Clinic at the Peter Bent Brigham Hospital and insurance toward hospital expenses, at a fee of \$74 per year. All full-time students are required to pay this fee. The hospital insurance runs for a period of twelve months and covers hospitalization both in Boston and elsewhere.

Officers of the armed services, or those required to carry hospital insurance by governmental agencies may request exemption from the insurance portion of the fee but will be required to pay the clinic fee in the amount of \$54. Exemption from the insurance will be granted only after the student submits evidence that he has satisfactory coverage for hospital expenses.

Dependents of students may be included in the insurance aspects of the plan, if the student so elects; the rates are \$40 for wives or husbands and \$26 for one or more children, for twelve months. Students are advised to avail themselves of this option.

Every new student paying the medical fee is required to undergo a complete medical examination, by appointment, shortly after admission to the School.

Evidence of recent successful vaccination against smallpox is required for entrance to Harvard University and a certification form for this purpose is sent to each student who is accepted for admission.

Any illness necessitating absence from classes should be reported to the Student Health Service Office by the student, or an attending physician, and to the Information Office at the School.

In order to realize maximum benefit from the opportunities provided by the academic program of the School, students must be in

excellent physical and mental health. Prospective students are urged to undergo a thorough examination to satisfy themselves of their fitness before making arrangements to enter the School.

HOUSING

The Henry Lee Shattuck International House of the School of Public Health was opened in the fall of 1960 to provide housing for students and their families. The International House includes three apartment houses, situated at 199, 203 and 207 Park Drive, Boston, a few minutes' walk from the School. There are 69 apartments on four floors, including units with one to four rooms, plus kitchenette, bath and foyer. Essential furniture and kitchen equipment are provided. Laundry facilities and a play area for children are located in the basement of building 207, and social and recreational facilities for the common use of residents are available on the ground floor of buildings 199 and 203.

Furnished rooms for single students are available in the vicinity of the School, or in nearby residential areas such as Brookline.

Students who wish to apply for an apartment in the International House or who wish help in finding a room or a house, should write to the Registrar, Harvard School of Public Health, 55 Shattuck Street, Boston, after they receive notice of admission to the School. Married students should indicate the size of their family, number of rooms desired and whether they wish furnished or unfurnished quarters.

EMPLOYMENT

Generally it is not advisable for a student to seek employment as a means of financing his training because the course of study at the School is an intensive, full-time program. If the wife of a student has secretarial or technical skills and wishes to obtain temporary employment, she may consult the Harvard Medical Center Personnel Office in Building A of the Medical School after getting settled in Boston. Wives of foreign students who wish to work in Boston must indicate this when obtaining their visas for the United States.

HARVARD UNIVERSITY

SCHOLARSHIPS, FELLOWSHIPS AND TRAINEESHIPS

The scholarships, fellowships and traineeships described below were available to students for the academic year 1961-62. It is expected that comparable awards will be available for 1963-64.

Applications for scholarships, traineeships and fellowships should be made to: The Registrar, Harvard School of Public Health, 55 Shattuck Street, Boston 15, Massachusetts. Applications should be received by April 1, 1963 for awards for the academic year 1963-64. Under exceptional circumstances awards may be made at other times. There are separate regulations for: Public Health Traineeships Title I, Atomic Energy Commission Fellowships and Fellowships and Scholarships Available in other Departments of the University (page 103).

Traineeships and Fellowships

Public Health Service Traineeships Title I, are available for physicians, nutritionists, medical social workers, dentists, health educators, veterinarians and others whose professional skills are required in modern public health practice. Similar traineeships are also available to those wishing to specialize in radiological hygiene and in air pollution control problems. Students should apply directly to the Public Health Service: Chief, Division of General Health Services, Bureau of State Services, Public Health Service, U.S. Department of Health, Education and Welfare, Washington 25, D.C. A limited number of these traineeships are available from the institutional grant awarded by the Public Health Service to the School.

Public Health Service Traineeships Title II, Traineeships for Nurses, are all awarded from an institutional grant to the Harvard School of Public Health.

The Title I and Title II traineeships are available only to citizens of the United States or to those who have filed a Declaration of Intent.

Two fellowships provided by a grant from the Children's Bureau are available for students who intend to specialize in Maternal and Child Health.

National Institutes of Health Fellowships. The National Institute of Mental Health has fellowships for psychiatrists, psychologists and social workers who wish to specialize in mental health aspects of public health. The other Institutes of Health such as the National Cancer Institute, National Institute of Arthritis and Metabolic Diseases, the National Heart Institute, etc. also have fellowships.

Traineeships in epidemiology are available to candidates with degrees of M.D., Ph.D. or equivalent. They are given on an annual basis and are renewable.

There are traineeships in biostatistics for pre-master's training and pre-doctoral research.

Traineeships are available in industrial hygiene, microbiology, nutrition, physiology, radiological health, and tropical public health at the pre-doctoral and post-doctoral levels.

Fellowships are available in Industrial Medicine and Industrial Hygiene from the Atomic Energy Commission. Applicants for fellowships in Industrial Medicine (physicians only) should write to: A.E.C. Fellowships in Industrial Medicine, Atomic Energy Project, University of Rochester, School of Medicine and Dentistry, Rochester 20, New York. Applicants for fellowships in Industrial Hygiene (industrial hygienists) should write to: Industrial Hygiene Fellowship Office, Oak Ridge Institute of Nuclear Studies, Oak Ridge, Tennessee.

Fellowships for one to three years in Community Mental Health have been made possible by a grant from the Grant Foundation of New York. The purpose of these fellowships is to supply trained specialists in the field of community mental health. The fellowships are intended for psychiatrists, clinical psychologists, and social workers who are studying at a level consistent with a Master's or Doctor's degree.

Fellowships and Scholarships Available in other Departments of the University as well as in the School of Public Health

There are a few General University Scholarships and Fellowships which, under the terms of the original gift to the University, may

HARVARD UNIVERSITY

be awarded to students in any part of the University, including the School of Public Health. Many of these are for persons from a particular city, state or country, for study of a particular field, or for those with other special qualifications. Applications for these scholarships must be received at the School of Public Health by February 1, 1963. A pamphlet describing these University Scholarships may be obtained from the Secretary of Admissions and Scholarships of the School of Public Health.

STUDENTS, 1961-62

DEGREE CANDIDATES

Akay, Vedat F., M.D., D.P.H.	Afyon, Turkey
Alley, James W., A.B., M.D.	Rochester, New York
Arsenian, Jirair H., M.D.	Jerusalem, Jordan
Baler, Lenin A., PH.D., S.M. IN HYG.	Holbrook, Mass.
Barnes, Walter C., Jr., S.B., M.D.	Palatine, Ill.
Bassett, Gerald R., A.B., M.D.	Los Altos, Calif.
Bermann Torrents, Sylvia T., M.D.	Buenos Aires, Argentina
Bloom, Bernard L., PH.D.	Kailua, Hawaii
Brieger, Gert H., A.B., M.D.	Berkeley, Calif.
Broell, Kathleen M., S.B.	Seattle, Wash.
Bullen, Beverly A., S.M., S.M. IN HYG.	Chattanooga, Tenn.
Chitre, Kamalakar T., M.B.,B.S., D.P.H.	Bombay, India
Chowdhury, Uma, PH.D.	Calcutta, India
Clarke, Eugene J., Jr., S.B., M.D.	Nashville, Tenn.
Colburn, Harold N., M.D.	Winnepeg, Man., Canada
Collier, Torrence J., S.B., M.D.	Hot Springs, Ark.
Cooper, Kenneth H., S.B., M.D.	Oklahoma City, Okla.
Costin, Ronald E., A.B., M.D.	Dallas, Texas
Cullen, Marion P., S.M.	Georgetown, Pa.
Davis, Milton S., A.B., S.M., PH.D.	West Lafayette, Ind.
De Morais, A. Tito, M.D., D.T.M.&H.	Lisbon, Portugal
Dorn, C. Richard, M.D.V.	Cincinnati, Ohio
Duggar, Benjamin C., S.M.	St. Petersburg, Fla.
Dysinger, Paul W., A.B., M.D.	Loma Linda, California
Erhardt, Carl L., B.A., M.P.A., S.M. IN HYG.	Woodhaven, N.Y.
(in absentia)	
Faragalla, Farouk F., B.V.SC., M.D.V., S.M. IN HYG.	Cairo, Egypt
Fettig, Marilyn A., A.B., M.S.S.	Boston, Mass.
Fogleman, Ruth D., B.SC., S.M.	Rio Piedras, P.R.
Foster, Bessie R., S.M.	Bunkie, La.
Geser, Anton G., M.D.	Copenhagen, Denmark
Glass, Robert L., S.B., D.M.D., M.P.H.	Westwood, Mass.
(in absentia)	
Glasser, Marvin N., B.B.A., M.P.H.	Boston, Mass.
Gofstein, Ralph M., S.B., M.D.	Natick, Mass.
Gregory, Kelly G., M.D.	Hartsville, Tenn.

SCHOOL OF PUBLIC HEALTH

Hanley, Marshall J., A.B., M.D.	Richmond Hill, N.Y.
Hannon, Virginia R., A.M., M.S.W., S.M. IN HYG.	Atlanta, Georgia
Harfouche, Jamal K., B.A., M.D., S.M. IN HYG. (in absentia)	Beirut, Lebanon
Hayashida, Takuya, M.AGR.	Fukuoka, Japan
Highriter, Marion E., A.B., M.N., M.P.H.	Wilkes-Barre, Pa.
Hoover, Ralph S., S.B., M.D.	Waterloo, Iowa
Hosack, Alice M., S.B., A.M., S.M. IN HYG.	Sharon, Pa.
Jackson, Howard W., B.ED., S.M. IN HYG.	Hopkinton, Mass.
Jayakeerthy, Chatra V., M.B., B.S., D.P.H.	Mysore, India
Jeanneret, Olivier, M.D., D.P.H.	Geneva, Switzerland
Johnson, Louis F., Jr., S.B., M.D., M.P.H. (in absentia)	Washington, D.C.
Jones, David R., S.B., M.D.	Durham, N.C.
Jones, Quitman W., M.D.	San Antonio, Texas
Karhausen, Lucien R., M.D.	Brussels, Belgium
Klerman, Lorraine V., A.B., M.P.H. (in absentia)	Newton Center, Mass.
Klevay, Leslie M., S.B., M.D.	Skokie, Ill.
Krank, Daniel F., S.B., M.D.	San Francisco, Calif.
Lane, John M., A.B., M.D.	Old Greenwich, Conn.
Lennox, Robert H., B.S.C., M.D.C.M., D.T.M.	Montreal, P.Q., Canada
Lin, Hsiang-Ju, A.B., S.M. IN HYG.	Cannes, France
Lin, Tong-Ming, M.D., DR.MED.SC.	Taipei, Taiwan
Lochaya, Serene, B.S.C., S.M., S.M. IN HYG.	Thonburi, Thailand
Mahon, William A., L.R.C.P.ED., L.R.C.S.ED., L.R.F.P.&S. GLAS.	Grimsby, Ont., Canada
Masse, Louis M. F., M.D., M.P.H. (in absentia)	Reims, Marne, France
Mata Jiménez, Leonardo, LIC. IN MICRO. & CLIN.CHEM., S.M. IN HYG.	Guadalupe, Costa Rica
Mayshark, Cyrus, A.B., M.ED., H.S.D.	Corvallis, Ore.
McIntyre, Marie J., S.M.ED.	Watervliet, N.Y.
Menken, Jane A., A.B.	Philadelphia, Pa.
Mindlin, Rowland L., S.B., M.D.	Scarsdale, N.Y.
Minou, Ali A., M.A., M.D.	Teheran, Iran
Mollstedt, Bengt O., M.D.	Gothenburg, Sweden
Monroe, Kenneth E., A.B., M.D.C.M.	Needham, Mass.
More, Sister Mary Thomas, S.B., M.D.	Framingham Center, Mass.
Neill, Robert H., M.E.	Washington, D.C.
Nondasuta, Amorn, M.D., M.P.H.	Prae, Thailand
Oral, Sevinc N., M.D.	Ankara, Turkey

SCHOOL OF PUBLIC HEALTH

Pannu, Surjit K., M.B.,B.S.	New Delhi, India
Peterson, Carlton J., A.B., M.D.	Sioux City, Iowa
Plank, Stephen J., PH.B., A.B., M.D., M.P.H.	Carmel, Calif.
Poskanzer, David C., A.B., M.D.	Boston, Mass.
Postic, Bosko, M.D.	Novi Sad, Yugoslavia
Qureshi, Mohammad S., B.S., M.A., D.P.H.	Moltan City, West Pakistan
Razavi, Lawrence M., M.B.,B.S.	London, England
Reinherz, Helen N., A.B., S.M.	Malden, Mass.
Rolfe, Phyllis, A.B., M.S.S.	Cambridge, Mass.
Sayner, William V., Jr., A.B.	La Grange, Ill.
Schultz, Irwin, A.B., M.D., S.M. IN HYG.	Morton Grove, Ill.
Segall, Ascher J., M.D., M.P.H.	Montreal, P.Q., Canada
Shahidi, Marie T., M.D.	Teheran, Iran
Simmons, Alvin J., S.M., PH.D.	South Dartmouth, Mass.
Singh, Kirpal, M.B.,B.S., D.P.M.	Poona, India
Sousa, Consuelo M., S.B., M.D.	Washington, D.C.
Srinivasan, K., M.A.	Podanur, India
Stoudt, Howad W., PH.D.	Lexington, Mass.
Swaminathan, Madras C., M.B.,B.S.	Hyderabad, India
Tai, Yung-Ching, M.B.	Taipei, Taiwan
Talogo, R. Widodo, M.D.	Djakarta, Indonesia
Tapp, Jesse W., A.B., M.D.	Los Angeles, Calif.
Tepper, Lloyd B., A.B., M.D., M.I.H.	Los Angeles, Calif.
Torrens, Paul R., M.D.	San Francisco, Calif.
Torrents, Arnaldo F., M.D.	Buenos Aires, Argentina
Trivedi, Dalpatram H., M.B.,B.S., D.P.H.	Jamnagar, India
Trivedi, Gulvantlal K., M.B.,B.S., D.P.B., D.P.H.	Maharashtra, India
Underhill, Dwight W., B.E.	Washington, D.C.
Wallstrom, Ira C., S.B., M.D.	Pasadena, Calif.
Ward, John E., A.B., M.D.	Pittsburg, Kans.
Webb, Mildred, A.B., M.S.W.	Kansas City, Mo.
Wu, Tsung-Hsien, M.D., DR.MED.SC.	Taipei, Taiwan
Yoder, Robert E., S.B.	North Weymouth, Mass.
Zangara, Anthony J., A.B., M.D.	Boonton, N.J.
Ziskind, Alan E., A.B., M.D.	Belmont, Mass.

PART-TIME SPECIAL STUDENTS

Avitabile, Florence, M.D.	Wellesley, Mass.
Buie, Dan H., Jr., A.M., M.D.	Wellesley Hills, Mass.
Green, Emmanuel B., A.M.	Dorchester, Mass.
Neumann, Alfred K., A.B., A.M., M.D., M.P.H.	Brookline, Mass.

DEGREES

On June 15, 1961, the following degrees were conferred:

DOCTOR OF PUBLIC HEALTH

Malcolm Aubrey Fernando, M.B.,B.S. (*Univ. of Ceylon*) 1953, D.C.H. (*Royal Coll. of Physicians & Surgeons, England*) 1955, D.P.H. (*ibid.*) 1956.

Thesis: Morbidity and Medical Care: Sex Differences Among Children Under Different Environments

Special Field: Maternal and Child Health

Abelardo Temoche, M.D. (*Universidad de San Marcos, Peru*) 1949, M.P.H. (*Harvard Univ.*) 1953.

Thesis: Suicide and Known Mental Disease

Special Field: Biostatistics and Epidemiology

DOCTOR OF SCIENCE IN HYGIENE

Daniel Gerald Seigel, S.B. (*City Coll. of New York*) 1951, A.M. (*Brooklyn Coll.*) 1956, S.M. (*Columbia Univ.*) 1956.

Thesis: Analysis of Withdrawal Bias in a Cohort Study

Special Field: Biostatistics

MASTER OF PUBLIC HEALTH

Anthony Charles Irvine Adams, M.B.,B.S. (*Univ. of Adelaide, Australia*) 1959.

John Hoover Baier, S.B. (*Univ. of Wisconsin*) 1947, M.D. (*ibid.*) 1951.

Peter Stephen Bing, A.B. (*Stanford Univ.*) 1956, M.D. (*Cornell Univ.*) 1959.

Charles Martel Bryant, A.B. (*Rice Inst.*) 1952, M.D. (*Univ. of Texas*) 1959.

Louis Harold Cargill, A.B. (*Wesleyan Univ.*) 1951, M.D. (*Univ. of Rochester*) 1956.

Charles Edward Cherubin, S.B. (*Rensselaer Polytechnic Inst.*) 1955, M.D. (*New York State Univ.*) 1959.

Lewis Barrington Clayton, M.D. (*Univ. of Tennessee*) 1948.

John Edward Davies, M.B.,B.S. (*Univ. of London*) 1944, M.R.C.S., L.R.C.P. (*England*) 1944, L.M.C.C. (*Royal Coll. of Physicians & Surgeons, Canada*) 1957.

George Clinton Denniston, A.B. (*Princeton Univ.*) 1955, M.D. (*Univ. of Pennsylvania*) 1959.

Ilgä Krumins Dinbergs, M.Sc. (*Ukrainian Husbandry Inst., Germany*) 1949, M.D. (*Universitaet Muenchen, Germany*) 1954.

Robert Haldeman Dunn, S.B. (*La Sierra Coll.*) 1940, M.D. (*Coll. of Medical Evangelists*) 1943.

SCHOOL OF PUBLIC HEALTH

- Hugh Scott Fulmer, A.B. (*Syracuse Univ.*) 1948, M.D. (*State Univ. of New York*) 1951.
- Prem Vir Gulati, M.B.,B.S. (*Punjab Univ., India*) 1953.
- Thomas Livingston Hall, A.B. (*Harvard Univ.*) 1953, M.D. (*ibid.*) 1957.
- James Edward Hertzog, S.B. (*Franklin and Marshall Coll.*) 1953, M.D. (*Univ. of Pittsburgh*) 1957.
- Clinton Leroy Holt, S.B. (*Antioch Coll.*) 1949, M.D. (*Western Reserve Univ.*) 1953.
- Wadie Wanies Kamel, M.B.,B.CH. (*Ein Shams Univ., Cairo, Egypt*) 1955.
- Satyabrata Kar, M.B.,B.S. (*Utkal Univ., India*) 1953, D.P.H. (*Calcutta Univ., India*) 1958.
- Alfred Kogon, A.B. (*Cornell Univ.*) 1952, M.D. (*New York Univ.*) 1956.
- Djordje Kozarevic, M.D. (*Univ. of Belgrade, Yugoslavia*) 1957.
- Herschel Clarence Lamp, A.B. (*Washington Missionary Coll.*) 1948, M.D. (*Coll. of Medical Evangelists*) 1952.
- Llewellyn J. Legters, A.B. (*Univ. of Buffalo*) 1955, M.D. (*ibid.*) 1956.
- Richard Loyd Masters, S.B. (*Wayne State Univ.*) 1953, M.D. (*Univ. of Michigan*) 1957.
- Samuel Goodman McClellan, A.B. (*Harvard Univ.*) 1941, M.D. (*ibid.*) 1944.
- George Carl Mohr, A.B. (*Luther Coll.*) 1951, B.A. (*Univ. of Oxford, England*) 1954, M.D. (*Harvard Univ.*) 1957.
- Lucy D. Ozarin, S.B. (*New York Univ.*) 1934, M.D. (*New York Medical Coll.*) 1937.
- Stephen J. Plank, PH.B. (*Univ. of Chicago*) 1948, A.B. (*Univ. of California*) 1951, M.D. (*ibid.*) 1955.
- Homer Le Roy Reighard, S.B. (*Franklin and Marshall Coll.*) 1945, M.D. (*Temple Univ.*) 1948.
- Nicholas Revotskie, S.B. (*U.S. Naval Academy*) 1942, M.D. (*Temple Univ.*) 1952.
- George Albert Saxton, M.D. (*Harvard Univ.*) 1946.
- Roland Howard Shamburek, S.B. (*Univ. of Wisconsin*) 1950, M.D. (*ibid.*) 1953.
- Gordon Sanford Siegel, A.B. (*Univ. of Chicago*) 1949, M.D. (*ibid.*) 1954, S.B. (*ibid.*) 1954.
- Joseph John Smith, S.B. (*Queens Coll.*) 1951, M.D. (*State Univ. of New York*) 1955.
- Harry Yandell Spence, M.D. (*Medical Coll. of Virginia*) 1944.
- Donald James Strand, A.B. (*Univ. of North Dakota*) 1943, S.B. (*ibid.*) 1944, M.D. (*Temple Univ.*) 1946.
- John Desmond Floyd Tarr, A.B. (*Pacific Union Coll.*) 1949, M.D. (*Coll. of Medical Evangelists*) 1955.
- Jose Maria Vanella, M.D. (*Universidad Nacional de Cordoba, Argentina*) 1942.

HARVARD UNIVERSITY

Don Ramon Van Wyngarden, A.B. (*Westminster Coll.*) 1951, D.D.S. (*Washington Univ.*) 1955.

Richard Frederic White, A.B. (*Univ. of California*) 1950, M.D. (*ibid.*) 1953.

James Frederick Wittmer, M.D. (*Washington Univ.*) 1957.

MASTER OF SCIENCE IN HYGIENE

(*in the field of Biostatistics*)

Yvonne Millicent Mahala Bishop, B.A. (*Univ. of London*) 1947.

(*in the fields of Biostatistics and Epidemiology*)

Arturo Librea y Altamirano, M.D. (*Univ. of the Philippines*) 1942.

(*in the field of Epidemiology*)

Donald Oliver Anderson, B.A. (*Univ. of British Columbia, Canada*) 1950, M.D. (*ibid.*) 1954, F.R.C.P. (*Canada*) 1959.

Hans Boris Nevinny-Stickel, M.D. (*Leopold Franzens Universitat, Austria*) 1951.

Norman Allen Scotch, A.B. (*Boston Univ.*) 1951, A.M. (*ibid.*) 1952, PH.D. (*Northwestern Univ.*) 1957.

(*in the field of Environmental Health*)

Larry David Samuels, A.B. (*Blackburn Coll.*) 1955, M.D. (*Univ. of Illinois*) 1959.

(*in the field of Industrial Hygiene*)

Neil Anthony Gaeta, S.B. (*Tufts Univ.*) 1954, S.M. (*Massachusetts Inst. of Technology*) 1956.

Susumu Yoshizawa, B.ENG. (*Univ. of Tokyo, Japan*) 1954, M.ENG. (*ibid.*) 1956.

(*in the field of Nutrition*)

Marilyn Mary Thompson, A.B. (*Radcliffe Coll.*) 1955.

(*in the field of Public Health Practice*)

Virginia D. Byron, S.B. (*Univ. of Utah*) 1949, M.S.W. (*Tulane Univ.*) 1953.

Elizabeth Kingsbury Caso, S.B. (*Simmons Coll.*) 1935, S.M. (*Univ. of Chicago*) 1942.

Naomi Osterman, S.B. (*Boston Univ.*) 1941, S.M. (*ibid.*) 1953.

Harry Mathew Raulet, A.B. (*Columbia Univ.*) 1949, PH.D. (*ibid.*) 1960.

(*in the field of Public Health Practice, Community Mental Health*)

Thomas Robert Brigante, A.B. (*Univ. of Buffalo*) 1951, A.M. (*Boston Univ.*) 1953, PH.D. (*ibid.*) 1956.

SCHOOL OF PUBLIC HEALTH

- Ivor William Browne, L.R.C.P., M.R.C.S.I. (*Royal Coll. of Physicians & Surgeons, Ireland*) 1954, D.P.M. (*Royal Coll. of Surgeons, Ireland*) 1957.
Evalyn Grace Everett, A.B. (*Univ. of California*) 1943, A.M. (*ibid.*) 1944, PH.D. (*New York Univ.*) 1956.
Carolynn Margery Goldrath, A.B. (*San Francisco State Coll.*) 1951, M.S.W. (*Univ. of Denver*) 1954.
Ruth Gruschka, DIP.S.W. (*Jerusalem School of Social Work*) 1947, M.S.W. (*Washington Univ.*) 1951.
Virginia Rose Hannon, A.B. (*Spelman Coll.*) 1934, A.M. (*Atlanta Univ.*) 1935, M.S.W. (*Simmons Coll.*) 1942.
Kent Samuel Miller, S.B. (*Coll. of William and Mary*) 1949, A.M. (*Univ. of Missouri*) 1951, PH.D. (*Univ. of Texas*) 1956.

On March 12, 1962, the following degrees were conferred:

DOCTOR OF PUBLIC HEALTH

- Lorraine Vogel Klerman, A.B. (*Cornell Univ.*) 1950, M.P.H. (*Harvard Univ.*) 1953.
Thesis: A Study of Health Education in Industry
Special Field: Public Health Practice
Ascher Jasha Segall, M.D. (*Univ. of Lausanne, Switzerland*) 1956, M.P.H. (*Harvard Univ.*) 1959.
Thesis: Background Radiation and Cancer in Northern New England
Special Field: Epidemiology

DOCTOR OF SCIENCE IN HYGIENE

- Lenin Allen Baler, A.B. (*Harvard Univ.*) 1947, A.M. (*Boston Univ.*) 1948, PH.D. (*ibid.*) 1950, S.M. IN HYG. (*Harvard Univ.*) 1960.
Thesis: A Cohort Study of Juvenile Court Male First Offenders
Special Field: Public Health Practice, Community Mental Health

FALL TERM — FIRST PERIOD (September 24 to November 14, 1962)

INTERDEPARTMENTAL COURSE		CREDIT UNITS	
1a	The Human Community **	2.5	
40a,b,c	Biostatistics and Epidemiology ***	3	(7) †
ENVIRONMENTAL HEALTH			
2a,b	Radiological Hygiene	2	(4)
3a,b	Occupational Medical Clinics	.5	(1)
5a,b	Aviation Health and Safety	1	(2)
15a,b	Divisional Seminar on Health-Related Aspects of Water Resource Management	1	(2)
BIostatISTICS			
1a,b	Principles of Biostatistics *	1.75	(3.5)
15a,b	Special Seminar	1	(2)
Epidemiology			
1a,b	Principles of Epidemiology *	1	(2.5)
15a,b	Departmental Seminars	1	(2)
INDUSTRIAL HYGIENE			
2a,b	Industrial Air Analysis	2	(4)
6a,b	Industrial Ventilation and Air Conditioning	2	(4)

Unscheduled courses: Interdept. Course 42a,b; Epidemiology 17a,b; Industrial Hygiene 17a,b; Microbiology 17a,b; Nutrition 17a,b; Physiology 17a,b; Public Health Practice 17a,b, 41a,b; Tropical Public Health 17a,b. (See Department for description)

* Required of M.P.H. candidates

** Semi-elective courses for M.P.H. candidates

*** Required of S.M. in Hyg. candidates

† Figures in parentheses are units for entire course, if this runs longer than one period

8	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
9					ENV. HEALTH 2a,b	
10	PUBLIC HEALTH PRACTICE 1a,b*	MICRO.- T.P.H. 1a,b,c **	MICRO.-T.P.H. 1a,b,c **	MICRO.- T.P.H. 1a,b,c **	PUBLIC HEALTH PRACTICE 1a,b*	
11	NUTRITION 1a **	INTERDEPT. COURSE 40a,b,c BIO.- EPID. ***	INTERDEPT. COURSE 1a** HUMAN COMMUNITY	INTERDEPT. COURSE 40a,b,c BIO.- EPID. ***	IND. HYG. 6a,b	INTERDEPT. COURSE 40a,b,c BIO.- EPID. ***
12	INTERDEPARTMENTAL COURSE 1a** HUMAN COMMUNITY	BIOSTAT. 1a,b*	ENV. HEALTH 5a,b ENV. HEALTH 15a,b BIOSTAT. 15a,b EPID. 15a,b MICRO. 15a,b P.H.P. 15a,b T.P.H. 2a,b	BIOSTAT. 1a,b*	INTERDEPARTMENTAL COURSE 1a** HUMAN COMMUNITY	ENV. HEALTH 3a,b CLINICS
1						
2						
3		NUTRITION 1a**	ENV. HEALTH 2a,b RAD. HYG.	M.C.H. 15a,b		
4		IND. HYG. 2a,b LAB.		IND. HYG. 2a,b LAB.	MICRO- BIOLOGY TROPICAL PUBLIC HEALTH 1a,b,c** LAB.	IND. HYG. 6a,b
5						

* REQUIRED OF M.P.H.

CANDIDATES

** SEMI-LECTURE COURSES

FOR M.P.H. CANDIDATES

*** REQUIRED OF S.M. HYG.

CANDIDATES

FALL TERM — SECOND PERIOD (November 15, 1962 to January 19, 1963)

INTERDEPARTMENTAL COURSE		MATERNAL AND CHILD HEALTH	
	Credit Units		Credit Units
3b History and Philosophy of Public Health	1	1b Principles of Maternal and Child Health **	2
40a,b,c Biostatistics and Epidemiology ***	2	15a,b Departmental Seminar	1 (2)
ENVIRONMENTAL HEALTH		MICROBIOLOGY	
2a,b Radiological Hygiene	2 (4)	1a,b,c Ecology and Epidemiology of Infectious Diseases **	2 (6)
3a,b Occupational Medical Clinics	.5 (1)	2b Current Research	1
5a,b Aviation Health and Safety	1 (2)	15a,b Seminars in Microbiology	1 (2)
15a,b Divisional Seminar on Health-Related Aspects of Water Resource Management	1 (2)	PHYSIOLOGY	
		1a,b Human Physiology	1.5 (3)
BIostatISTICS		PUBLIC HEALTH PRACTICE	
1a,b Principles of Biostatistics *	1.75 (3.5)	1a,b Basic Concepts of Public Health Practice *	2 (3)
15a,b Special Seminar	1 (2)	3b Development of Personality	1
EPIDEMIOLOGY		4b,c Control of Chronic Disease and Cancer, Gerontology and Rehabilitation	1 (2)
1a,b Principles of Epidemiology *	1.5 (2.5)	15a,b Special Seminars	1-2 (2-4)
3b Clinical Problems in Infectious Disease	1 (2)	TROPICAL PUBLIC HEALTH	
15a,b Departmental Seminars	1	1a,b,c Ecology and Epidemiology of Infectious Diseases ** (see listing under Microbiology 1a,b,c for credit units)	1 (2)
INDUSTRIAL HYGIENE		2a,b Ecology and Prevention of Tropical Diseases	1
2a,b Industrial Air Analysis	2 (4)	4b Clinical and Pathologic Features of Tropical Diseases	1
6a,b Industrial Ventilation and Air Conditioning	2 (4)		

Unscheduled courses: Interdept. Course 42a,b; Epidemiology 17a,b; Industrial Hygiene 17a,b; Maternal and Child Health 17b,c,d; Microbiology 17a,b; Nutrition 17a,b; Physiology 17a,b; Public Health Practice 17a,b, 41a,b; Tropical Public Health 17a,b. (See Department for description)

* Required of M.P.H. candidates

** Semi-elective courses for M.P.H. candidates

*** Required of S.M. in Hyg. candidates

† Figures in parentheses are units for entire course, if this runs longer than one period

8	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
9					ENV. HEALTH 2a,b	
10	MATERNAL & CHILD HEALTH 1b**	INTERDEPT. COURSE 40a,b,c BIO.- EPID. ***	MICRO.-T.P.H. 1a,b,c **	INTERDEPT. COURSE 40a,b,c BIO.- EPID. ***	MATERNAL & CHILD HEALTH 1b***	MICRO.-T.P.H. 1a,b,c **
11	IND. HYG. 6a,b	EPID. 1a,b *		EPID. 1a,b*	IND. HYG. 6a,b	INTER-DEPT. COURSE 40a,b,c BIO.- EPID. ***
12	PUBLIC HEALTH PRACTICE 1a,b*	BIOSTAT. 1a,b*	ENV. HEALTH 5a,b ENV. HEALTH 15a,b BIOSTAT. 15a,b EPID. 15a,b MICRO. 15a,b P.H.P. 15a,b T.P.H. 2a,b	BIOSTAT. 1a,b*	PUBLIC HEALTH PRACTICE 1a,b*	ENV. HEALTH 3a,b CLINICS
1				PHYS. 1a,b		
2						
3	BIostatistics 1a,b* LABORATORY	P.H. PRAC. 3b DEV. OF PERS.	INTER-DEPT. COURSE 3b HISTORY	IND. HYG. 2a,b LAB.	MICRO-BIOLOGY TROPICAL PUBLIC HEALTH 1a,b,c** LAB.	
4		IND. HYG. 2a,b LAB.	ENV. HEALTH 2a,b RAD. HYG.	EPID. 3b LECT. & CLINIC	IND. HYG. 6a,b	
5				IND. HYG. 2a,b LAB.		

* REQUIRED OF M.P.H.

CANDIDATES

** SEMI-ELECTIVE COURSES

FOR M.P.H. CANDIDATES

*** REQUIRED OF S.M. HYG.

CANDIDATES

SPRING TERM — THIRD PERIOD (February 4 to March 30, 1963)

INTERDEPARTMENTAL COURSE	<i>Credit Units</i>	MICROBIOLOGY	<i>Credit Units</i>
4c,d Research Methods in Community Health	2 (4) †	1a,b,c Ecology and Epidemiology of Infectious Diseases **	2 (6)
40a,b,c Biostatistics and Epidem.***	2 (7)	11c Public Health Lab. Proc.	2
ENVIRONMENTAL HEALTH		15c,d Seminars in Microbiology	1 (2)
1c Man's Responses to the Physical Environment **	2.5	NUTRITION	
2c,d Radiation Dosimetry	1.5 (3)	2c,d Advanced Topics	2 (3)
3c,d Occupational Medical Clinics	.5 (1)	3c,d Laboratory Technics	1 (2)
4c,d Occupational Medical Clinics	.5 (1)	PHYSIOLOGY	
5c,d Aviation Health and Safety	1 (2)	2c Environmental Physiology	1
6c,6d Human Factors in Occupational Performance and Safety		3c,d Principles of Toxicology	1.25 (2.5)
		PUBLIC HEALTH PRACTICE	
8c,d Community Air Pollution	1 (2)	2c,d Organization and Administration of Medical Care	1 (2)
BIOSTATISTICS		4b,c Control of Chronic Disease	1 (2)
2c,d Statistical Methods	2 (4)	5c,d Health Education	1 (2)
15c,d Special Seminar	1 (2)	6c,d Group Dynamics	1 (2)
EPIDEMIOLOGY		7c Principles of Supervision and Consultation	1
2c,d Epidemiology of Non-Infectious Disease **	1 (3)	9c,d Control of Mental Disorders	1 (2)
4c,d Human Heredity	1 (2)	10c,d Advanced Public Health Practice	2 (4)
15c,d Departmental Seminars	1 (2)	11c,d Health and Illness in Cross-Cultural Perspective	1 (2)
INDUSTRIAL HYGIENE		15c,d Special Seminars	1-2 (2-4)
1c,d Basic Problems in Occupational Health	3.5 (7)	TROPICAL PUBLIC HEALTH	
7c,d Aerosol Technology	2 (4)	1a,b,c Ecology and Epidemiology of Infectious Diseases ** (see listing under Microbiology)	
MATERNAL AND CHILD HEALTH		7c Laboratory Technics	2
2c,d Problems and Programs in Maternal and Child Health	2 (4)		

Unscheduled courses: Interdept. Course 42c,d; Biostat. 17c,d; Epidem. 17c,d; Ind. Hyg. 8c,d, 17c,d; Mat. and Child Health 3c,d, 17b,c,d; Microb. 12c, 17c,d; Nutrition 17c,d; Physiology 17c,d; P.H.P. 13c,d, 17c,d, 41c,d; T.P.H. 5c,d, 17c,d, 42c.

** Semi-elective courses for M.P.H. candidates *** Required of S.M. in Hyg. candidates

9	MONDAY		TUESDAY		WEDNESDAY		THURSDAY		FRIDAY			SATURDAY	
	ENVIRONMENTAL HEALTH 1c**		INTERDEPT. COURSE 40a,b,c BIO-EPID. ***	MICRO.-T.P.H. 1a,b,c **	EPID. 2c,d **	ENV. HEALTH 2c,d	INTERDEPT. COURSE 40a,b,c BIO-EPID. ***	MICRO.-T.P.H. 1a,b,c **	ENV. HEALTH 6c,d HUM. FACT.	M. C. H. 2c,d	NUTR. 2c,d	P. H. 4b,c	INTER-DEPT. COURSE 40a,b,c BIO-EPID. ***
10													
11													
12	INTER-DEPT. COURSE 4c,d RES. METH.		ENV. HEALTH 1c**		ENV. HEALTH 5c,d 8c,d 15c,d BIOSTAT. EPID. MICRO. NUTR. P.H.P.		PHYS. 2c		EPIDEMIOLOGY 2c,d** NON-INFECTIOUS DISEASE			IND. HYG. 1c,d	
1													

2	PHYS. 3c,d	P. H. P. 10c,d		PHYS. 3c,d		P. H. P. 5c,d		PHYS. 3c,d		P. H. P. 2c,d			
3	PHYS. 3c,d	P. H. P. 10c,d		P. H. P. 5c,d		P. H. P. 5c,d		P. H. P. 5c,d		P. H. P. 5c,d			
4	PHYS. 3c,d	P. H. P. 10c,d		P. H. P. 5c,d		P. H. P. 5c,d		P. H. P. 5c,d		P. H. P. 5c,d			
5	PHYS. 3c,d	P. H. P. 10c,d		P. H. P. 5c,d		P. H. P. 5c,d		P. H. P. 5c,d		P. H. P. 5c,d			
6	PHYS. 3c,d	P. H. P. 10c,d		P. H. P. 5c,d		P. H. P. 5c,d		P. H. P. 5c,d		P. H. P. 5c,d			

** SEMI-ELECTIVE COURSES
FOR M.P.H. CANDIDATES
*** REQUIRED OF S.M. HYG.
CANDIDATES

SPRING TERM — FOURTH PERIOD (April 8 to June 1, 1963)

INTERDEPARTMENTAL COURSE		<i>Credit Units</i>	
4c,d	Research Methods in Community Health	2	(4) †
ENVIRONMENTAL HEALTH			
1d	Principles of Water and Food Sanitation *	2.5	
2c,d	Radiation Dosimetry	1.5	(3)
3c,d	Occupational Medical Clinics	.5	(1)
4c,d	Occupational Medical Clinics	.5	(1)
5c,d	Aviation Health and Safety	1	(2)
6c,6d	Human Factors in Occupational Performance and Safety	1	
7d	Occupational Medicine	2	
8c,d	Community Air Pollution	1	(2)
BIostatISTICS			
2c,d	Statistical Methods	2	(4)
15c,d	Special Seminar	1	(2)
Epidemiology			
2c,d	Epidemiology of Non-Infectious Disease **	2	(3)
4c,d	Human Heredity	1	(2)
5d	Epidemiologic Problems in Infectious Disease	2	
15c,d	Departmental Seminars	1	(2)
INDUSTRIAL Hygiene			
1c,d	Basic Problems in Occupational Health	3.5	(7)
7c,d	Aerosol Technology	2	(4)
UNscheduled courses: Interdept. Course 42c,d; Biostat. 17c,d; Epidemiology 17c,d; Ind. Hyg. 8c,d, 17c,d; M.C.H. 3c,d, 17b,c,d; Microb. 17c,d; Nutrition 17c,d; Physiol. 4d, 17c,d; P.H.P. 13c,d, 17c,d, 41c,d; T.P.H. 5c,d, 8d, 17c,d.			

* Required of M.P.H. candidates

** Semi-elective courses for M.P.H. candidates

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY				
9	EPIDEMIOLOGY 2c,d** NON-INFECTIOUS DISEASE	ENV. HEALTH 7d OCC. MED.	ENV. HEALTH 2c,d** NON-INFECTIOUS DISEASE	ENV. HEALTH 7d OCC. MED.	ENV. HEALTH 6c,d HUM. FACT.	ENVIRONMENTAL HEALTH 1d*				
10							ENV. HEALTH 5d INF. DIS.	ENV. HEALTH 5d SUR- VEYS	M. C. H. P. 2c,d	P. H. P. 8d
11							ENV. HEALTH 1d*			
12	IND. HYG. 1c,d	ENV. HEALTH 1d*			IND. HYG. 1c,d	ENVIRONMENTAL HEALTH 1d*				
1	ENV. HEALTH 1d OPTIONAL DISCUSSION PERIOD				INTER- DEPT. COURSE 4c,d RES. METH. 3d					
2	PHYS. 3c,d	PHYS. 40d	PHYS. 40d	PHYS. 40d	PHYS. 3c,d		* REQUIRED OF M.P.H. CANDIDATES ** SEMI-ELECTIVE COURSE FOR M.P.H. CANDIDATES			
3	P.H.P. 10c,d	IND. HYG. 1c,d	IND. HYG. 1c,d	IND. HYG. 7c,d	MICRO. 13d RICK. DIS.	P. H. P. 2c,d				
4		BIO- STAT. 2c,d	BIO- STAT. 2c,d	BIO- STAT. 2c,d	PHYS. 40d & ENV. HEALTH 2c,d LAB.					
5	M. C. H. 2c,d	ENV. HEALTH 4c,d CLIN.	NUTR. ENT. 3c,d	ENV. HEALTH 3c,d CLIN.	ENV. HEALTH 2c,d LAB.					
6	P.H.P. 11c,d	P.H.P. 9c,d	T. P. H. 43d	P.H.P. 5c,d	ENV. HEALTH 3c,d CLIN.					



CALENDAR FOR THE ACADEMIC YEAR 1962-63

September 10, Monday
to September 21, Friday
September 17, Monday
to September 21, Friday

Orientation Program for Foreign Students
Registration of Students

FALL TERM, SEPTEMBER 24, 1962, TO FEBRUARY 2, 1963

September 24, Monday
October 12, Friday
October 15, Monday

First Period begins
Columbus Day: a holiday
Last day for changes in "a" and "a,b" courses of study
Veterans' Day: a holiday
First Period ends
Second Period begins
Thanksgiving Day: a holiday
Last day for changes in "b" courses of study

November 12, Monday
November 14, Wednesday
November 15, Thursday
November 22, Thursday
December 7, Friday

RECESS FROM SUNDAY, DECEMBER 23, 1962, TO SUNDAY, JANUARY 6, 1963

January 19, Saturday
January 21, Monday
to February 2, Saturday

Second Period classes end
Laboratory, library, or field work

SPRING TERM, FEBRUARY 4, 1963, TO JUNE 13, 1963

February 4, Monday
February 22, Friday
February 23, Saturday

March 30, Saturday

Third Period classes begin
Washington's Birthday: a holiday
Last day for changes in "c" and "c,d" courses of study
Third Period ends

RECESS FROM SUNDAY, MARCH 31, 1963, TO SUNDAY, APRIL 7, 1963

April 8, Monday
April 26, Friday

May 30, Thursday
June 1, Saturday
June 3, Monday
June 13, Thursday

Fourth Period begins
Last day for changes in "d" courses of study
Memorial Day: a holiday
Fourth Period ends
Comprehensive Examination
Commencement

Huntington Building

